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More Castings in Smaller Space

Output Doubled with Fewer Men by Use of Mechanical Molding and Conveyors in Altered Foundry of Nash Motors Co.—Large Savings in Flasks

BY ROGERS A. FISKE

NOTABLE savings in operating efficiency have been effected at the foundry of the Nash Motors Co., Kenosha, Wis. An imperative demand for more castings forced the company to make alterations and improvements which have radically changed its foundry practice. The features of the results obtained are:

One square foot of foundry space is now equivalent to four square feet formerly required.

Doubling the production of cylinders, cylinder heads and transmission case castings.

The productivity of each man has been increased 30 to 50 per cent.

Reduction of about \$50,000 in flask equipment effected.

All this, and more, has been accomplished by the installation of conveyor systems and sandslingers.

The General Layout

The equipment for molding transmission cases is practically the same as that used for cylinder blocks and heads. The latter installation, however, will be described because it offers more variety of detail and is the more important, in so far as total investment and savings are concerned. The general layout is as follows: An outer conveyor, elliptical in outline, is used to transport the cylinder-block flasks and, inside of the oval thus formed, is a second conveyor, of the same type and form, which carries the drags used in forming molds for cylinder heads. The new arrangement is designed for 400 cylinder-block castings and 400 heads per 10-hr. day and the actual floor space required for these operations is 4000 sq. ft.; that is, 10 sq. ft. for a cylinder block and head complete.

When the old production methods were in use, 3500 sq. ft. of floor space was required for pouring 75 cyl-



A Sandslinger, Working Over Four Molding Machines Mounted on a Turntable, Is Employed in Making Transmission Case Castings

inders and heads per 10-hr. day. This amounts to 46 sq. ft. per unit, thus showing that the new methods use one square foot of floor space whereas former practice required 4.6 sq. ft. per unit produced.

Substantial Savings in Man-Hours

The savings of man-hours is an important item in the economies effected. Formerly eight men made 75 cylinder castings in a 10-hr. day, whereas now 27 men make 400 castings in the same space of time. On a unit basis, one man now produces 15 cylinder blocks per 10-hr. day, whereas he formerly made 9.5; that is, the productiveness of each man has been increased about 50 per cent.

The same is true of cylinder heads. Where four men formerly made 100 castings in a 10-hr. day, 12 men now make 400 castings, the unit being 25 castings per man by the methods formerly employed and 33 castings per man by the use of the new conveyor and equipment. Each man's productiveness has thus been increased about 30 per cent.

In order to carry this analysis one step further, consider the investment for flask equipment. With the old methods, 400 cylinder blocks per day would have required 400 flasks which, valued at \$100 each, would represent an investment of \$40,000. The actual number of flasks used now, however, is only 62, thus effecting an investment saving of over \$30,000. The same

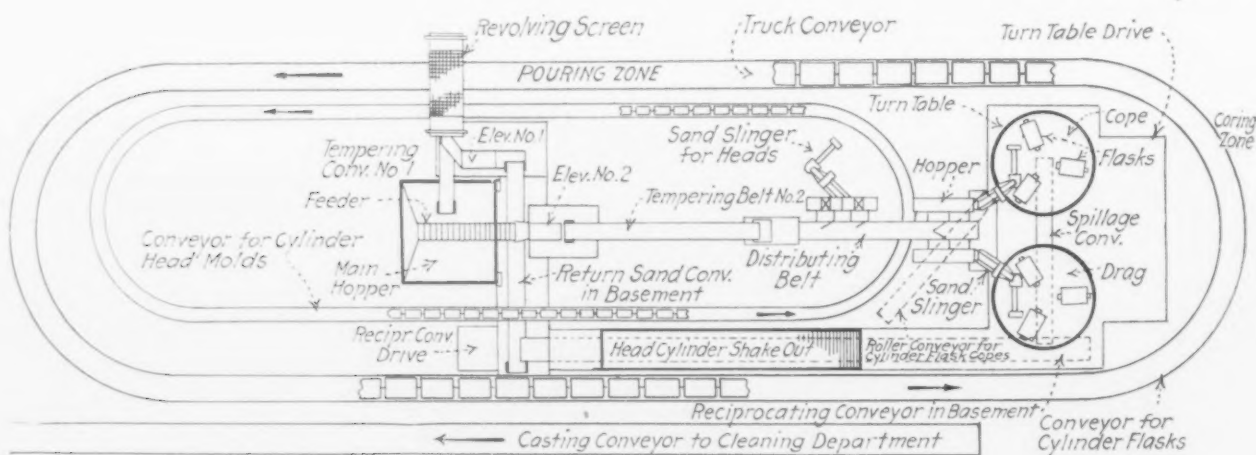
The sand is then discharged to a cross conveyor where it is again tempered under automatic control.

Provisions Made for Cooling Sand

The sand is then unloaded into a steel-plate, unlined, overhead storage hopper of 85-ton capacity. As originally erected this hopper was not divided into compartments and much trouble was experienced because the freshly discharged sand cut a channel through the sand in storage. It was found that the discharge to the conveyor beneath this hopper always came from the rear half of the storage space. This condition resulted in the delivery of hot sand to the molding machines. Another peculiar result was that the fresh hot sand actually baked the stored sand, adjacent to the channel, thus making a well-defined passageway for itself.

To overcome this the hopper was divided by a partition so that now, when sand is being unloaded into one side, it is being withdrawn from the other half. The temperature of the sand as it now reaches the molds is about 70 deg. Fahr. It is contemplated that trouble from hot sand may again be experienced during the summer months and provisions are being made to install another hopper, thus giving greater storage capacity, and affording the sand more time to cool off before delivery to the sandslingers.

A belt conveyor withdraws sand from the storage



General Plan of the Altered Equipment Showing Location of Mechanical Apparatus

is true of equipment for making heads; 52 drags are used instead of 400 and, if each drag is valued at \$50, the net investment saving is between \$15,000 and \$20,000. If 15 per cent is a fair figure with which to cover interest on investment, replacement and maintenance on the flask equipment, eliminated by improved methods, then there is a saving from this source of between \$7,000 and \$8,000 per year.

These savings result from the installation of equipment which reduces muscular effort and which can be so timed that the productive pace is set. All molding equipment is placed and operations are carried on within the confines of the outer conveyor, with the one exception that cylinder cores are stacked and assembled along the outer edge and at one end of the cylinder flask conveyor. Molding-sand spillage from the two stationary sandslingers falls through the grating tops of the turntables on which are mounted the cylinder-block molding machines. This sand falls upon a reciprocating conveyor which discharges to a similar conveyor running lengthwise of the basement, under the conveyor inclosure, and below the shake-out grating, as shown in the plan view. The sand accumulated at these two points is discharged onto a cross-belt conveyor where it is tempered under the control of an automatic valve. At the end of this conveyor is a magnetic pulley, which removes tramp iron just before the sand is unloaded into the boot of an elevator by means of which it is raised to an overhead revolving screen.

hopper and unloads it into a Rapp revivifier. It is then discharged to a belt conveyor which is unloaded by plops at three points, thus distributing sand to the three feeder hoppers, of 28 cu. ft. capacity each, one of which serves each sandlinger. A spillage hopper at the end of this belt conveyor receives the surplus sand which is not run into the feeder hoppers. The sand is used about four times each 10-hr. day.

At one end and within the confines of the cylinder-head mold conveyor is a movable sandlinger and two stationary stripping-plate machines. The head molds are made in a drag and are inclosed by a covering core in which are assembled the jacket and valve cores. A cast iron frame is placed over the covering core and wedge clamps are fitted. Drags are lifted by hand from the conveyor to the stripping-plate machines and, when the mold is completed, an air-operated motor hoist places it on a table of the conveyor, where it is fitted with a core and is locked.

Both flask conveyors are made up of a series of tables, each of which is slightly larger than the area of a flask. The motion of these tables is uniform and the tables are so spaced that the flasks cannot bump against each other, thus avoiding the damage to molds which results from rough handling. As the completed mold travels down one side of the conveyor, the metal is poured from hand ladles. The newly made cylinder head is removed from the mold at the shake-out grating and is conveyed to the cleaning department, where

the core is removed by vibration. The drag is replaced on the conveyor and is transported to the place where it is again used on a stripping plate machine.

Turntables Facilitate Production

Cylinder blocks are molded much in the same way, except that two stationary sandslingers are used, each feeding three molding machines mounted on a turntable. The three molding machines, that is, those on one turntable, are used only for making the drag half of the mold and the other three machines are used only for the copes. The turntables rotate slowly in synchronism with the travel of the conveyor so that, as a molding machine comes opposite the next drag or cope, as the case may be, it is placed on the machine and the molding operation is started. At this point in the cycle of operations, the second mold is partially completed and the third mold is ready to be removed from the third machine to the conveyor. The complete cycle is continuous and time intervals are so spaced that finished molds reach the pouring stand in an uninter-

rupted sequence. The core is removed by vibration. The drag is replaced on the conveyor and is transported to the place where it is again used on a stripping plate machine.

By this time the conveyor has moved the drag opposite the cope molding machines. A cope is fitted, the flask is locked and a pouring box placed in position.

It is interesting to note here that facing sand is hand sifted over the pattern before the sandlinger is brought into use and both drags and copes are butted, by means of air-operated machines, just before the sand is struck level.

As the molds pass along one straight run of the conveyor, the metal is poured from bull ladles. This is practically a continuous operation and is performed by two men. It has been found that this practice has created a standard of pouring which has resulted in a greater percentage of good castings than had been obtained by former practice. The cylinder castings are removed from the molds at the shake-out grating and are then placed on an apron conveyor for delivery to the cleaning department, where they are rough ground, chipped and then trim ground.



Cylinder Block Cores Are Assembled on a Truck and Placed in the Mold as a Unit



One Sandlinger Serves the Three Molding Machines Placed on Each Turntable. Note core assembly in foreground

rupted sequence. As the molding of each drag is completed, it is lifted by a hoist and placed on the conveyor.

Stored along the outer edge of the conveyor are the various core parts which are assembled on a truck and lifted by a hoist and put in place as a unit in the drag. The new Nash motor is constructed with seven bearings, thus requiring six body cores, as compared with

They are then sand blasted, finished, cleaned, inspected, water tested and conveyed to the machine shop, where the inner surface of the crank case is sprayed with Duco.

Copes are removed at the cylinder shake-out grating and the sand removed by vibrators. The copes are then placed on a roller conveyor for delivery to the cope molding machines. The cylinder-block castings are

lifted from the drag and placed on the conveyor for delivery to the cleaning department. The drags are shaken out, replaced on the outer conveyor tables and delivered opposite the drag molding machines.

Trouble Traced by Pattern Numbers

Each pattern is permanently numbered so that trouble can be traced readily in the event that any one of them should show either wear, misplacement or otherwise be at fault. The patterns are made of cast iron and are heated by electric units made by the Cutler-Hammer Mfg. Co., Milwaukee. From 70 to 75 tons of metal is poured to produce 400 cylinder blocks and 400 cylinder heads.

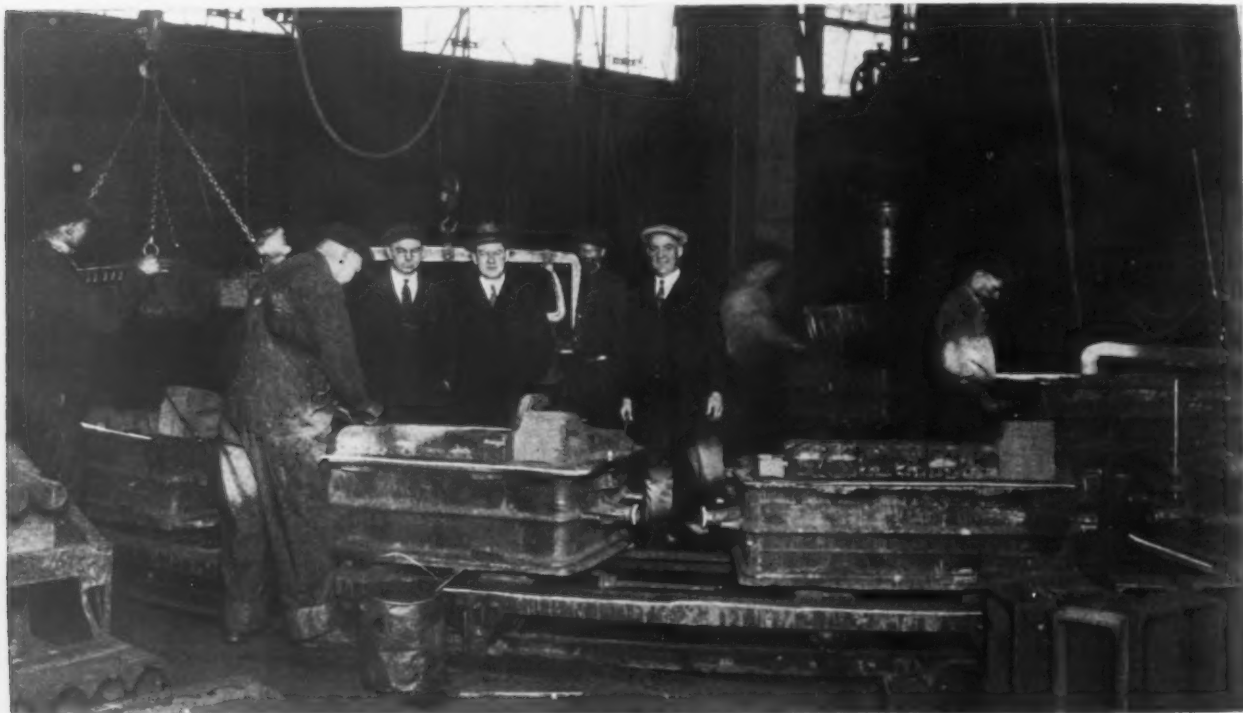
The question has been raised as to the abrasive action on patterns, resulting from the use of the sand-

throwing loose sand to the side, with an unsatisfactory mold as the result.

Keeping the Sand Uniform

An interesting procedure is followed in order to keep the sand uniform as to grade. One shovel full of new molding sand is placed on top of each cylinder-block mold and a shovel full of sea-coal facing is placed on every fourth cylinder-block mold. Every other day one shovelful of new molding sand and one shovelful of silica sand are run in on each third cylinder-block mold.

Sandslingers and turntables were furnished by the Beardsley & Piper Co., Chicago. The mold conveyors were made by the Palmer-Bee Co., Detroit, and the sand conveyors were furnished by R. W. McIlvaine,



The Conveyor Consists of a Series of Platforms, Each Slightly Larger Than the Area of a Flask

slinger. The experience to date at the Nash foundry does not indicate any difficulty from that source. It has been found, however, that a sandslinger makes the most satisfactory job when the nozzle is kept at a reasonable distance from the work. Contrary to expectations, a hard pack is not obtained by holding the nozzle close to the work. Under such conditions the sandslinger has a tendency to dig or blast out a hole, thus

Chicago. The Chain Belt Co., Milwaukee, made the flask conveyors and the Link-Belt Co., Chicago, furnished the Rapp revivifier. The Ingersoll-Rand Co., New York, supplied the air-operated motor hoists and the stripping machines were manufactured by the International Molding Machine Co., Chicago. The magnetic pulley separator was made by Dings Magnetic Separator Co., Milwaukee.

Standard Practices in Cold Finished Steel

Some of the leading manufacturers of cold finished steel bars have published a booklet on "Standard Practices" which contains interesting information regarding cold rolling of steel, which had its inception in a commercial sense in a process invented and patented by Bernard Lauth in 1859. For many years, the booklet says, this process was used for the cold rolling of wrought iron bars for shafting purposes. As steel began to take the place of wrought iron, the method was found to be equally suitable for steel shafting used in the transmission of power and in the manufacture of machinery, machine tools, agricultural implements, etc. At that time there were few manufacturers and the principal process employed was cold-rolling; hence the descriptive terms "cold rolled" which has been persistently applied in a general way ever since. To quote from the booklet:

"About 40 years ago the cold rolling and cold drawing processes were found to produce practically the same desirable physical properties, such as increased tensile strength and stiffness, accuracy to size, and smooth bright surface; and these processes from that

time have gradually become interchangeable and today they are considered equivalent in the trade.

"Measured in tons of production, probably no other branch of steel manufacture has developed as rapidly in the last 25 years as the cold finished bar industry. From a very small consumer of hot rolled bars it has become one of the largest users of merchant bars.

"The advent of the automobile, the development and common use of the typewriter, the calculating machine, the cash register, the many electrical and household utility devices, practically all within the past 25 years, have broadened the uses for this material. In this period automatic machinery has been developed for the rapid duplication of parts, and because of the suitability of cold finished steel, it is used very extensively in automatic machine work; and as the demand for cold finished steel has increased, there has been equal growth in its production."

The booklet contains a good deal of information about processes of manufacture, various grades of cold finished steel, standard manufacturing tolerances, standard dimensions and weights and other data. Copies may undoubtedly be obtained from any of the leading makers of cold finished steel.

Seamless Tubes by Mechanical Mill

Pilger Rolls with Automatic Feed—Steam, Electric
Power, Hydraulic and Pneumatic
Pressure All Employed

OPERATION of the first automatic Pilger mill ever run in the United States was started on Jan. 20 by the Delaware Seamless Tube Co., Auburn, Pa. This company has for many years been running a hand-operated Pilger mill in conjunction with a piercing mill, both being on the Mannesmann principle. The desire to go into larger sizes, however, and particularly into longer lengths of such sizes, made it advisable to put in a mechanically operated mill which could handle larger billets than was possible by manpower.

It is anticipated that there will be greater production from the new mill and, in particular, there will be a considerable cutting down of labor costs. In addition there is expected an improvement in smoothness of operation. Smoothness of finish of the hot-rolled product should follow, because of the mechanical handling, on regularly spaced intervals of turning, of the partially finished product in its way through the mill.

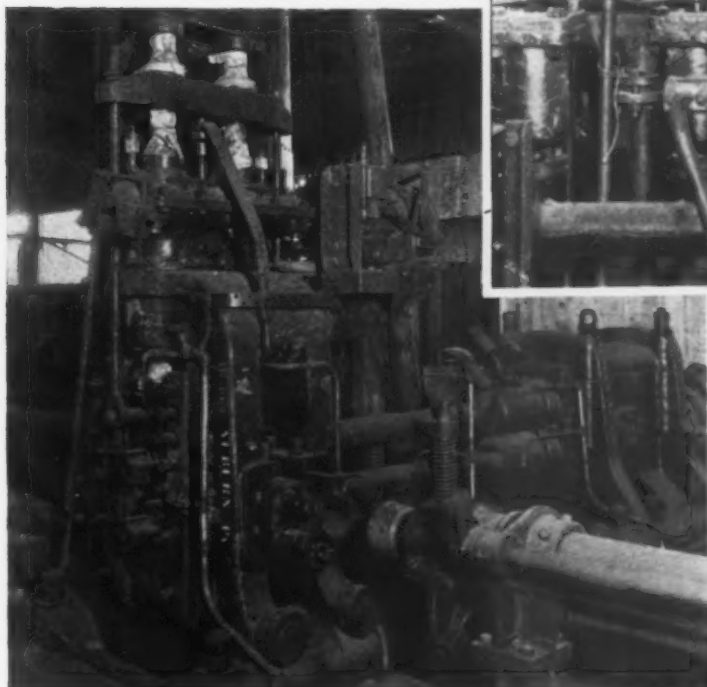
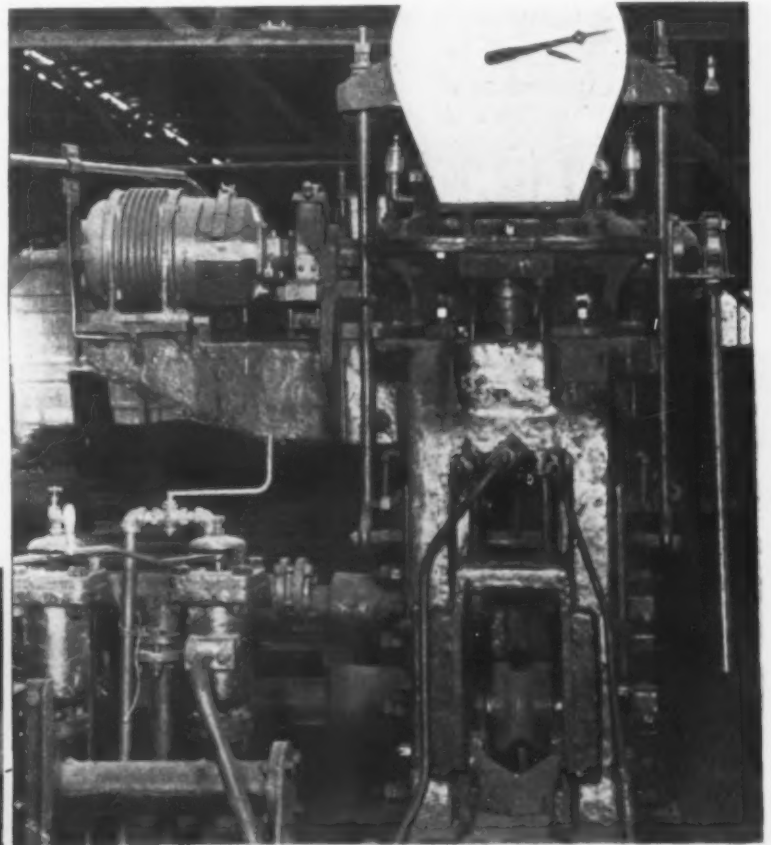
Inasmuch as the process is but imperfectly known

in the United States, a brief description of its essential features will be given. In this connection, the reader is referred to a series of four articles which appeared in THE IRON AGE of April 7, 14, 21 and 28, 1921, in which the theory of making seamless tubes by the Mannesmann piercing and Pilger mills is covered. In our issues of Feb. 18 and March 4, 1926, is a comparison of several methods, including the one here detailed. The piercing process is covered, also, by an article on a different form of mechanical mill, at page 57, THE IRON AGE, Jan. 3, 1924.

Essentially the process consists in forming a rough tube from a solid round billet by means of cross rolling over a mandrel in the piercing mill and then materially reducing the thickness of wall in the Pilger mill. This at the same time improves the smoothness and finish of the surface.

As an example, the material which was sent through the new mill at Auburn on its first day started out

AT Right Is the Pilger Mill as It Presents Itself to the Advancing Hollow Billet. The blank enters the pass between the rolls and is thrust back a short distance by the forging action of the rolls. Below the lower roll appears the initial support, hydraulically controlled, for centering the blank in the rolls. To strip the swaged tube from its mandrel, the top roll is raised and a stripping plate, raised by hydraulic power, engages the stripping ring on the mandrel



OUTLET Side (Left) of the Pilger Mill. Motor and control for raising the upper roll appear near top. At lower right is the tube-like runout into which the swaged tube passes and from which it goes to the cooling table. The pinion set appears above the runout, while the engine is located behind the wooden wall back of the pinions

as a solid billet of circular section $4\frac{1}{2}$ in. in diameter. This came through the piercing mill as a tube of 4% in. external and $3\frac{1}{16}$ in. internal diameter, the walls thus being about $\frac{5}{8}$ in. thick. After going through the Pilger mill the external diameter was $3\frac{11}{16}$ in., while the internal diameter had become $2\frac{7}{8}$ in. The material was on an order calling for tubes $3\frac{3}{4}$ in. external diameter and $2\frac{3}{4}$ in. internal diameter, these latter dimensions obtaining after two draws cold on the draw bench.

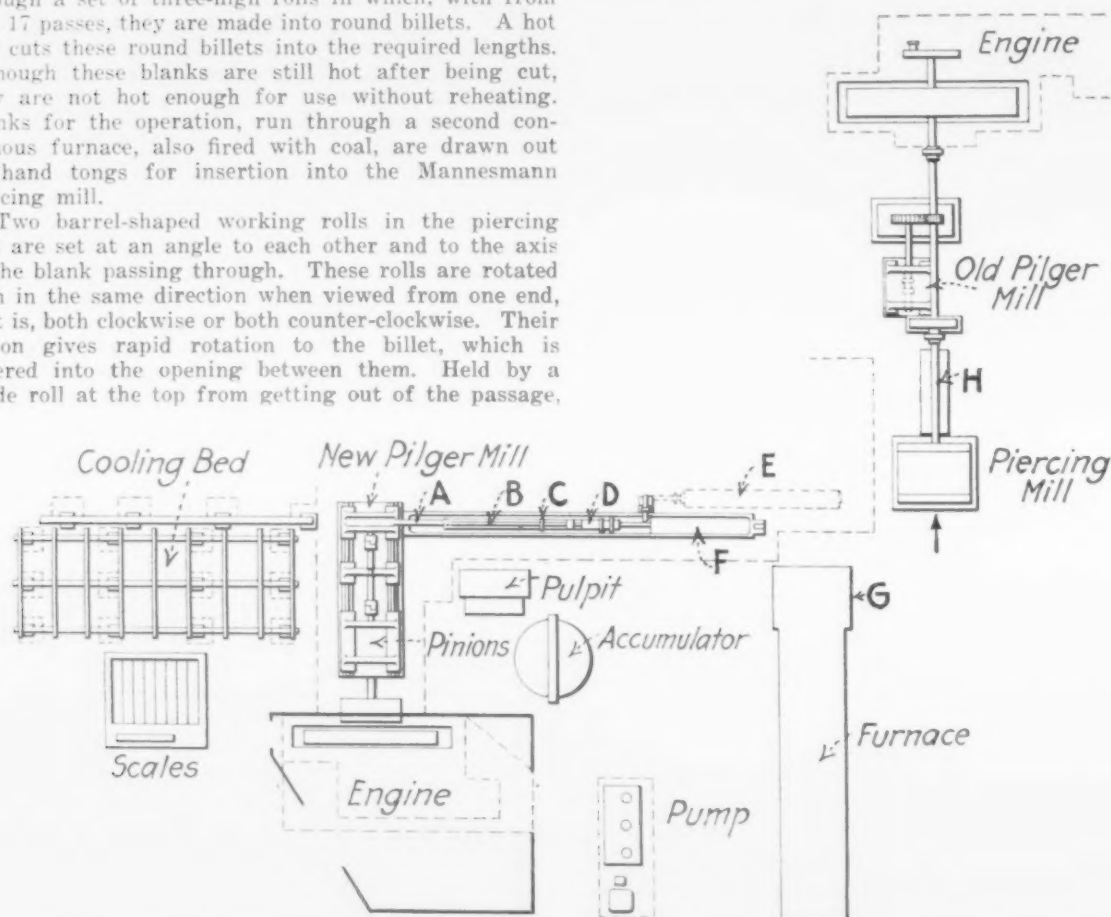
Operation of Piercing

Square billets are purchased in the open market. Inspection is severe and rejections sometimes reach heavy proportions. After being run through a coal-fired continuous heating furnace, the billets are passed through a set of three-high rolls in which, with from 7 to 17 passes, they are made into round billets. A hot saw cuts these round billets into the required lengths. Although these blanks are still hot after being cut, they are not hot enough for use without reheating. Blanks for the operation, run through a second continuous furnace, also fired with coal, are drawn out by hand tongs for insertion into the Mannesmann piercing mill.

Two barrel-shaped working rolls in the piercing mill are set at an angle to each other and to the axis of the blank passing through. These rolls are rotated both in the same direction when viewed from one end, that is, both clockwise or both counter-clockwise. Their action gives rapid rotation to the billet, which is entered into the opening between them. Held by a guide roll at the top from getting out of the passage,

is "against" the blank—that is, exactly opposite the direction in an ordinary rolling operation. Consequently, every time the portion not cut away comes around, it strikes the blank a definite and severe blow in a direction which throws the blank out from between the rolls and back toward the place whence it came.

In moving back, the blank automatically is given a definite rotation for a fraction of a turn and again is passed in between the rolls as their rotation to the cut-away section permits. Again the virtual hammer blow or kneading operation takes place and so, by successive stages and to the accompaniment of a large number of such blows, the blank progresses through the rolls. It will be noted that the final size produced by this mill is such that it may pass through the smallest portion of the roll pass.



Layout of the Mill, Including Both Piercing and Pilger Units. Cylindrical blanks (solid) are taken from the furnace door at G and enter the piercing mill as shown by arrow. Leaving the first mandrel at H as a rough, thick-walled tube, the blank is placed at A, on mandrel B, to enter the Pilger mill. C is the nut giving rotation to A between strokes; D is the pneumatic cross-head which holds the blank continually up to the rolls; E its air reservoir and F the hydraulic cylinder advancing the cross-head and, with it, the tube being forged

the billet is drawn through by the frictional action of the rolls and at the same time the material is worked out to the surface.

Thus a tube is formed which passes onto a mandrel centered between the rolls and held by a steady rest at the far end. The operation of making the hole is purely that produced by the action of the rolls, as the mandrel is not a piercing or boring instrument. It simply takes the product as it goes through and keeps it centered while it is passing through.

Forging in the Pilger Mill

From this point and without reheating, the blank goes to the Pilger mill, where it is placed upon a mandrel preparatory to being sent through the mill. While this process is carried on by means of rolls with parallel axes, mounted and operated in the same manner as an ordinary rolling mill, it is nevertheless a forging or kneading process rather than a rolling process, as that term is ordinarily understood. The rolls are so designed that the pass is cut away through a part of the circumference. The direction of rotation

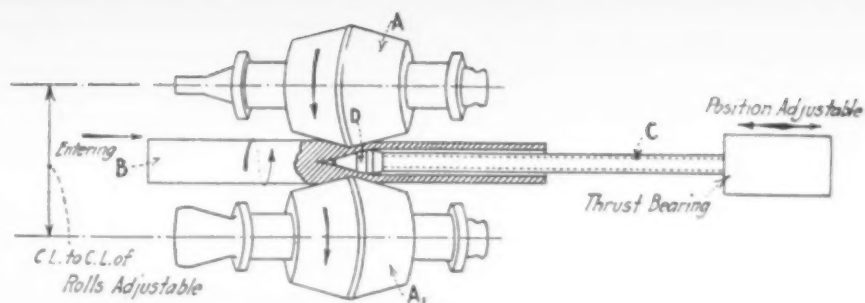
Advancement of the mandrel carrying the blank is produced by hydraulic pressure operating in a long cylinder. This is applied to what might be termed a cross-head, which in itself consists of a pneumatic cylinder carrying the mandrel at the forward end of its plunger. The motion of the hydraulic ram is steadily forward through the rolls, but at a slow pace.

Forcing the blank backward by the hammer forging action of the rolls compresses the air in the pneumatic cylinder. As soon as the roll contour permits, this compressed air forces the mandrel and blank forward again for the next stroke of the rolls. Hence the air acts as a virtual spring, which takes up the effect of the blows, but at the same time continually presents the material for the next and succeeding blows. Rotation of the mandrel and the tube blank it carries is produced by a spirally-formed section of the plunger rod, working through a nut. A ratchet device prevents turning in the other direction on the reverse stroke.

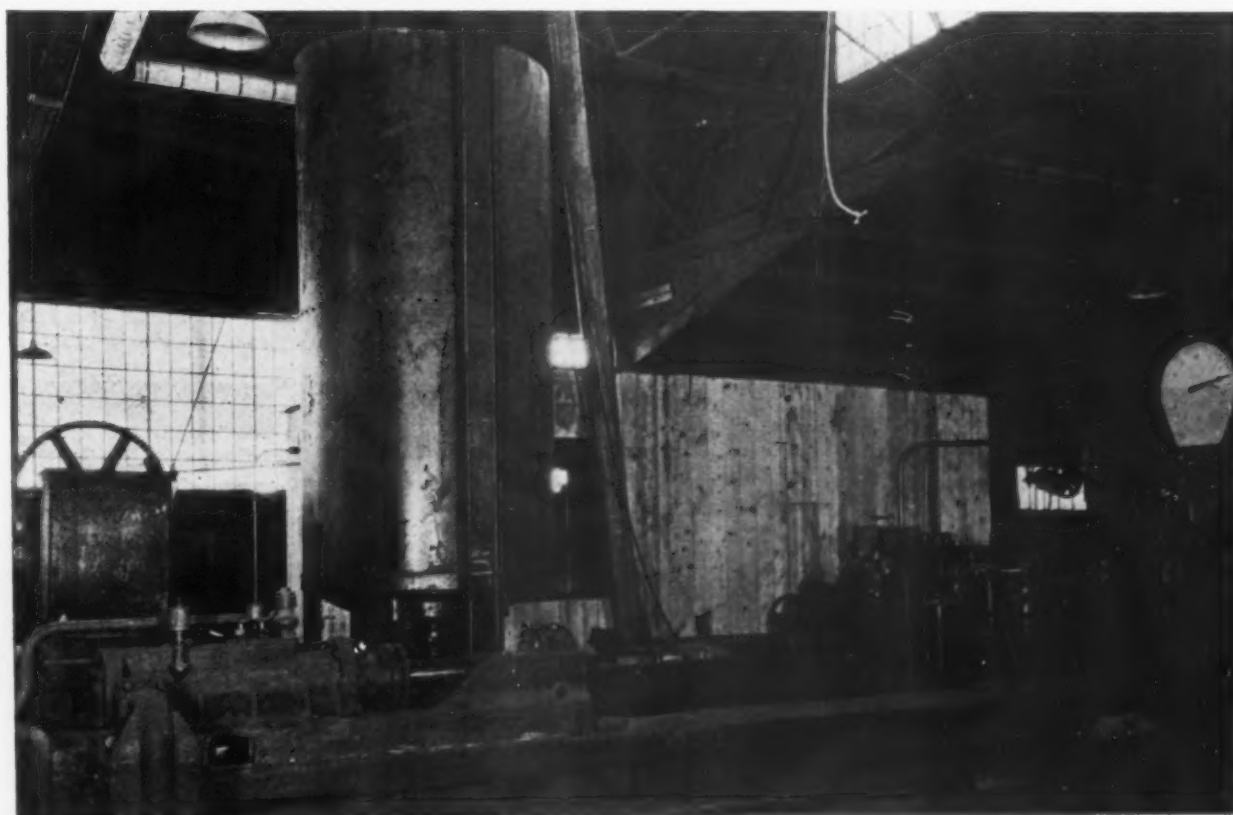
Hydraulic pressure used in the main cylinder of the Pilger mill is at 800 lb. per sq. in. The air pres-



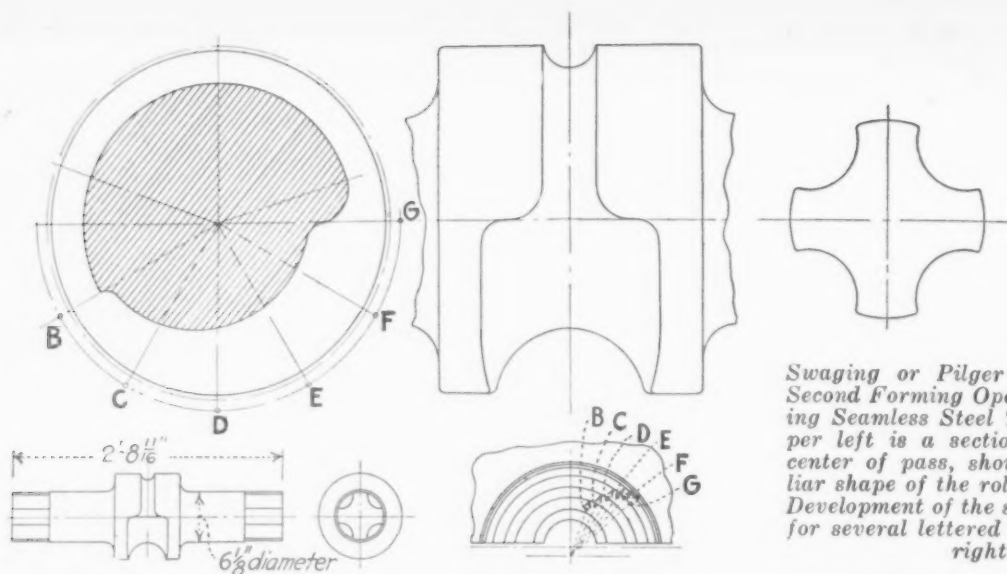
General View of the Mill (Above). At center is the Pilger mill, with accumulator at right. The flywheel is on the engine driving the piercing mill, a portion of which shows below the overhanging motor support on the Pilger mill. The furnace is back of the accumulator and the engine drive in the house at extreme right



Essential Elements of the Piercing Operation, Rotation of the Billet B Being Accomplished by Its Friction Against the "Askew" Rolls A and A1. The billet is shown partly in section along its center line



Mandrel-Carrying Device Which Advances the Hollow Billet Into and Through the Pilger Mill. The cylinder in left foreground, actuated by air pressure, takes the rebound as the blank is forged in the mill, while itself being constantly advanced by hydraulic pressure. Pilger mill is at extreme right



Swaging or Pilger Roll Used in Second Forming Operation in Making Seamless Steel Tubes. At upper left is a section through the center of pass, showing the peculiar shape of the roll at that point. Development of the section is given, for several lettered radii, at lower right

sure for the cross-head varies from 60 to 80 lb. An electric motor operates the screw-down of the mill. Hydraulic power is employed to raise and lower the front guides of the mill and also the stripper block, which removes the pilgered tube from the mandrel.

The mill was purchased through H. L. Schreck, Pittsburgh, American representative for the Deutsche Maschinenfabrik A. G., Duisburg, Germany, this concern being known colloquially as "Demag." A Becker roll finishing machine is being obtained from Germany which will automatically machine the peculiarly shaped roll grooves for the different sizes of tubes made.

Under the hand process with the old mill, which is still in position, the greatest length which could be swaged was 12 ft. The limitation here was on the physical capacity of the men. On the new mill it will be possible to obtain lengths up to 30 ft. Similarly, on the old mill the thinnest wall which could be obtained was 3/16 in., while with the new mill a wall as thin as 1/8 in. may be made. This factor is particularly important, because it will cut down the amount of work required in the subsequent operation of cold drawing and hence will reduce materially the ultimate cost of production.

On the original layout of the mill the Pilger or swaging process is that described by the Mannesmann United States patent of July 16, 1895, numbered 542,801. This process, which was put into use by the Delaware company more than twenty years ago, has proved thoroughly suitable for making the fine grades of tubing demanded by the trade. Consequently the same principle of operation was adhered to when it was decided to install new machinery to procure the several benefits detailed above.

Thin-Wall Tube from Thick-Wall Blank

One peculiar feature of the Pilger rolls is that a thin-walled tube is made from a pierced billet with

relatively heavy walls. This results in subjecting the material to a larger proportion of the forging process than when the difference in thickness of wall is less. The coarse grain of the pierced billet is thus broken up and made finer by the work necessary to reduce to the thinner section. Another advantage lies in the fact that the metal, in going through the piercing mill, is handled much more advantageously, because thin-wall piercing is extremely severe punishment for the steel.

As the thick-wall pierced billet is swaged or forged in the Pilger mill over a smooth mandrel of high-grade steel, the inside finish produced is free from the objectionable scores and scratches sometimes otherwise experienced. This makes the product, after cold drawing, show a smooth and highly polished inside surface, suitable for cylinders without further polishing or grinding. As a matter of fact, in the cold drawing department, it is regular practice in this mill after each draw to polish the mandrel head, which lies inside the tube during the drawing process. Polishing is done by means of a small grinder just before the insertion of the next blank.

For oil-well working barrels, which the company furnishes to the oil field in large quantities, this inside finish is particularly necessary. At the same time, however, the product from the Pilger mill has an excellent outside finish, such that the tube may be used for piston rods, hose mandrels, parts requiring nickel plating, etc. Hot-rolled boiler tubes made by this method have been known to last, in the same installation, considerably longer than tubes made by some other methods.

While the range of sizes on the Pilger mill as now installed is from 3 1/2 in. outside diameter down, and with wall thicknesses from 1 in. to as little as 1/8 in., depending somewhat upon the diameter of the tube, the changes cannot be made from one size to another



Finishing Department Showing Battery of Draw Benches for Cold Working of Tubes. In middle distance at left are two of the straightening machines

except by changes in rolls. The rolls required for the mill are in three sets, each set being worked out in a number of different sizes corresponding with the size of the finished product. As these rolls gradually wear in service, it will be possible to machine a roll originally designed for one size into that required for the next larger size. This process may be continued within the roll set, but cannot be carried indefinitely.

In the finishing department is a battery of draw benches for cold-drawing the product of the Pilger mill. Several varieties of straightening machines, including both the gag type and the roller type, are located in this department. Here is also an annealing oven operated on the muffle principle, the tubes being placed within sealed containers to prevent scaling. The pickling department removes the initial scale remaining after the Pilger process and before the material enters the finishing department.

As the plant already had excess boiler capacity it was decided to drive the new mill by a steam engine rather than by electric motor. The prime mover consists of a 300-hp. variable-speed engine furnished by the Harrisburg (Pa.) Foundry & Machine Works. The

main shaft carries a 12-ton steel flywheel made by the Mesta Machine Co. Speed of rotation of the engine may be changed while the engine is in motion by varying the point of cut-off, which is governed by a hand wheel and link motion.

Where the Finished Tubes Go

Products of the company go into a wide diversity of fields. About 25 different parts of automobiles are made from these seamless steel tubes, including the steering column, the drive shaft, tie rods, bumpers, etc. For the oil fields, oil-well working barrels for pumping form the principal outlet. A large amount of material is shipped to aircraft factories for use in the frame, for the guys and for piping around the engine. This, of course, is a particularly exacting service and only the highest quality of product can meet the specifications and inspection.

Large quantities of boiler tubing are shipped for use in the United States Navy, while other boiler tubes go to makers of boilers. Mechanical tubing of all kinds is thus produced, as well as large quantities of stock for making motorcycles and bicycle frames.

Evaluating Various Grades of Coal*

A Plea for an Intelligent Classification of Bituminous Grades Similar to That for Iron Ores

BY RALPH HAYES SWEETSER

IT is almost presumptuous for a man in the iron business to come before a group of men in the coal business and urge the adoption of some method for the evaluation of coal. On the other hand, the iron men have made use of workable rules for finding the values of many grades of iron ores, and the rules for the determination of iron ore values are so accurate and so practical that there are really no difficulties in arriving at the values of the millions of tons of iron ore consumed in this country every year. The basis of the evaluation of iron ores is *iron*. The basis for the evaluation of coals should be *carbon*.

Coal and Iron Ores Compared

There are different classes of iron ores depending on chemical analysis and structure and also depending on the presence of substances, desirable or undesirable, in certain processes of iron and steel manufacture.

Similar conditions prevail in bituminous coal. Certain coals are unfitted for certain purposes, but are desirable in other branches of industry. Bituminous coals are found in groups in a way similar to the grouping of iron ores, and different coal regions produce coals of different characteristics just as the different iron ore regions produce iron ores of different characteristics. These affect the value of iron ores, just as varying characteristics affect the value of bituminous coals. Iron ores carry certain earthy materials that are often valueless in the uses to which they are put. The same condition prevails in bituminous coals. These deleterious substances detract from the value of iron ores, just as they detract from the value of bituminous coals.

The substances in iron ores on which no money value is placed are water, rock, silica, alumina and loss on ignition. The presence of these substances must be accepted and the uses of the iron ore governed accordingly. In many cases, the ores are beneficiated and, when shipped to market, the highest iron content possible is attained within the bounds fixed by the limits of cost of production and the price obtained for the enriched ore. The ore men have a sure method for knowing how much the increased iron percentage will be worth; coal men have no such yard stick.

Exactly the same sort of conditions exist in bituminous coal. Many coals can be prepared for the market

so that they will have a much higher value than the coal as mined. It is necessary that this cost of cleaning the coal shall not exceed the increased price that it will bring in the market. The coal man knows the cost but he does not know the increased market value.

The uses of coal are chiefly for metallurgical purposes, raising steam, making of gas and for domestic uses. Coals best suited for one of these purposes is not best suited for the others. Similarly, ores that are suitable for making foundry pig iron are not suitable for making Bessemer, and the ores that are suitable for making low phosphorus pig iron are entirely too expensive to be used for making basic iron.

Uses of Coal and Plans for Evaluation

In the past, there has not been an intelligent distribution of coals because the general public has not been informed as to the uses of coal. Many of the coal operators have known nothing about the final disposition of the coal shipped from their own mines. The sales agents and the retailers of coal have had no means of evaluating coals except to make the price as high as the market would stand. The producers and the distributors of coal have not yet found a dependable method for finding out how much more valuable their product would be if the coal is prepared so as to have less objectionable materials mixed with it.

Several plans have been proposed by the users and shippers of steam coal to arrive at some method of evaluation. This has generally centered around the B.t.u. value of the coal. But even this method has not been generally accepted. Some people wish to get their price based on the B.t.u. value of the coal as shipped; others wish to have it on the B.t.u. value of the dry coal; others wish to have this value determined after taking out all the ash, oxygen and other worthless substances.

The subject of the evaluation of coal is so far-reaching and so important, that no one group of interested people can bring about an acceptable method. It must be the result of the study of the many practical groups of producers and users, based on methods that are scientifically and commercially sound. A group of men like the coal and coke committee of the American Institute of Mining and Metallurgical Engineers is well fitted to undertake this big work, and it is hoped that the importance of the task, the urgency of the need, and the ability of the men comprising your committee will be sufficient reason for undertaking this.

*A paper delivered before one of the coal sessions at the annual February meeting of the American Institute of Mining and Metallurgical Engineers in New York, Feb. 17. The author is assistant to vice-president American Rolling Mill Co., Columbus, Ohio.

The Dwellings of Tomorrow

II.—The Use of Iron and Steel in Residential Construction Will Result in Safer and Healthier Homes



N old saying remarks that the burnt child dreads the fire. Perhaps the proverb works by proxy, for slowly and surely the trend toward fire-safe homes has set in and its in-

fluence is being felt in new types of fireproof floor construction using metal lumber or steel joists of various descriptions; in metal stairs; in metal roofing; in metal trim and baseboard (to prevent the ever-present danger of fire from crossed wires); in metal doors and metal partitions and metal laundry-chutes—in the use of long-wearing and fire-resisting materials wherever inflammable wood was formerly used.

Metal Houses Lightning-Safe

BUT there are other reasons why the house of tomorrow will be safer and healthier because it will be built largely of metal. For one thing, it will be lightning-safe. If one does not consider this much of a physical hazard, what about the strain upon thousands of nervous systems during an electric storm? Lightning does hit houses and does cause fires and, incidentally, does frighten a great many women and children. And lest you think that a steel house might be a dangerous place in a thunderstorm, hearken to the words* of the late Dr. Charles P. Steinmetz, chief consulting engineer of the General Electric Co., and an authority on lightning:

"I can think of just three places where you will be absolutely safe in a thunderstorm: one is an underground chamber. Another is a space entirely surrounded with a metal network. The last—and the only one of which you are likely to be able to take advantage—is a steel-framed building.

"Anywhere else you *may* be struck. . . . Wood, stone, brick and stucco houses are about equally likely to be struck by lightning. All are poor conductors. Steel framed-buildings are excellent conductors. They tend to re-

*American Magazine, July, 1922.

lieve by 'silent discharges' the electric strain always existing between earth and sky during a thunderstorm. Sometimes they are struck, but the people inside them never know it. The lightning is instantaneously carried to the ground and dissipated."

So much for the theoretical safety of wooden houses with lightning rods and the scientific security of the dwellings of tomorrow!

In Earthquake Zones

FROM the safety standpoint, there are many other reasons why the iron and steel house is superior to the wooden residence. For instance, a properly constructed steel-frame house is as near earthquake-proof as any building that can be erected. The only building of more than one story which stood practically unharmed in the heart of the Santa Barbara shock district in the recent disturbance there was a steel-frame structure. For dwellers in the shock-zones, steel construction may well be more than a convenience, it may be an ever present help in time of trouble.

Structural engineers say that steel-frame houses would resist the sudden stresses of a tornado better than wooden houses. Unless one has seen the utter devastation which one of the wind-storms can leave in its wake, he will hardly appreciate what this additional margin of safety may well mean to dwellers in tornado-districts.

Then there is the matter of mice and insect vermin. So long as wood is used in homes, so long as the heat of the home cracks and warps the wooden partitions, doors, stairs, etc., just so long will there be places where vermin can breed and live. Powders and sprays, fumigations and cements will not remove them with assurance. Wood is the friend of the household pest and until the smooth, impregnable surface of metal makes it impossible for vermin to breed, just so long will there be vermin in the home.

Hospitals have long recognized this fact and metal and tile have been called to aid in the fight against insect pests. It seems reasonable to believe that our dwellings could, like the hospitals, be vermin-proof at a reasonable cost, if there were no place for vermin to breed.

"ONE of our natural handicaps in new inventions is to get away from precedent. Architects and builders cling to old designs and methods which have proved good and find it difficult to create new designs or methods for the sake of getting the benefit of new materials. Concrete and steel offer distinct opportunities for architects to design and build houses which are attractive and satisfactory in every way, yet little resemble the present ideas of design and construction.

"There have been few radical changes in methods of house construction in many years. If those in the small house building industry are sufficiently anxious to increase their production, there are endless opportunities open to them in devising new and improved methods of construction at greatly reduced prices. Those interested in large building construction have revolutionized their industry as a result of scientific study and there is no reason why it can not be done in small house construction."

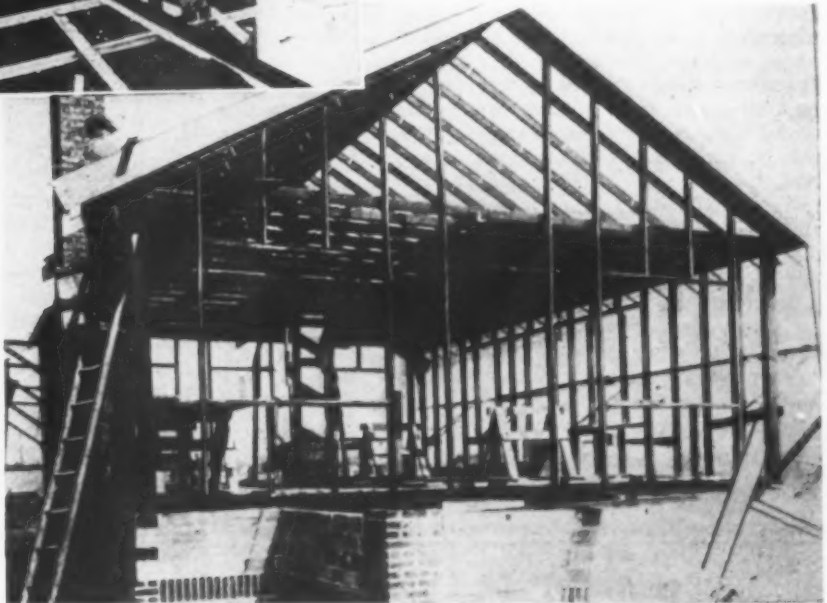
HENRY R. BRIGHAM, Boston, before National Association of Real Estate Boards in Chicago.

These photographs show the method of constructing a steel-frame bungalow as used by C. H. Dexheimer & Son, 1420 Parkside Boulevard, Toledo, Ohio. Steel studs, joists, rafters and metal lath are used in place of wood. Outside dimensions are 24 ft. 4 in. by 34 ft. 4 in., with an 8-in. tile wall to the first floor joists. On this are set steel floor joists of the metal lumber type



For the walls, 4-in. studs are spaced 24 in. on centers and are covered with rib lath weighing $3\frac{1}{2}$ lb. per yd. The method of erection is similar to that with a wood frame. Material is purchased cut to length, punched on the job with a small hand punch, and bolted together. Frame can be erected in about three days with four mechanics

Floors are concrete, reinforced with 4-lb. rib lath, covered with finished oak attached to wood sleepers. Walls are waterproofed cement plastered to 2-in. thickness and back plastered. Roof is asphalt shingles on wood sheathing. Cost of house, including all plumbing, heating and electrical work, was about \$4,000



From the standpoint of fire-safety, earthquake-safety, lightning-safety, tornado-safety and, finally, vermin-safety, is there any doubt that the homes of

tomorrow, built largely of iron and steel, will be healthier, happier, safer and far more durable homes than those of today?

Large February Building Construction

Construction contracts in February, according to F. W. Dodge Corporation, amounted to \$389,900,000 in the 37 states east of the Rocky Mountains. Although this was 15 per cent less than the January figure, it represents an increase of 25 per cent over last February and is the highest February total on record. As for many months past, residential construction absorbed nearly half of the total, at \$178,748,000. Commercial and industrial buildings respectively took \$50,177,000 and \$40,422,000.

For the two first months of the year construction started has aggregated \$847,058,400. This is an increase of 37 per cent over the corresponding period of 1925. Planning of new work continues at an enormous rate, the figures for January and February being more than \$850,000,000 each month.

New York State and Northern New Jersey has accounted for more than one-third of all the work put under way so far this year, the total having been \$300,323,000, or an increase of 72 per cent over the first two months of 1925. This is the greatest amount started in the first two months of any year.

Buying Screw Machine Products

Suggestions from a Manufacturer Aimed to Produce a Better Commercial Understanding Between Buyer and Seller

BY C. W. BETTCHER*

A BETTER understanding on the part of the buyer of screw machine products as to what constitutes good commercial practice in the manufacture of such parts, and what procedure tends to increase the price or otherwise hamper the source of supply, would be to the advantage of both buyer and seller. It is hoped that the following discussion will contribute to better understanding of the problems involved.

Let us discuss in the proper sequence the different steps taken between the original desire for such parts and the final delivery of the finished product, confining the discussion to work that is ordinarily made on automatic screw machines, and to order.

Blue Prints Preferred for Making Quotations

The first step is the submitting of blue prints or samples of the work, or both, for quotations. In making up the drawing it should be decided what dimensions need not be limited by any tolerances, what dimensions should be worked to ordinary commercial tolerances, and if certain dimensions should have close tolerances. It is naturally inadvisable to hold the manufacturer to extreme accuracies where such accuracies are not essential for serviceability. Extreme accuracies are relatively expensive to produce.

When dimensions are specified on a blue print in fractions it is usually recognized that that particular dimension does not have to be held to as close tolerances as when specified in decimals. In the case of a fractional dimension of $\frac{1}{2}$ in., for instance, it would be considered good automatic screw machine practice to hold diameters to a tolerance of 0.005 in., plus or minus, while if the dimensions were given as a decimal, 0.500 in., it would indicate that closer tolerances were desired and commercial practice would provide for holding such diameters to plus or minus 0.002 in. As regards the length of the piece, this would not ordinarily be held to a closer tolerance than 0.010 in., plus or minus.

When quoting from a sample only, the manufacturer would consider all dimensions as fractional, with tolerances accordingly, unless special mention was made in the request that certain dimensions should be such and such with certain tolerances.

*Secretary and sales manager of the Eastern Screw Machine Corporation, New Haven, Conn., and secretary of the Screw Machine Products Association, Eastern division.

Usually to quote from only a sample is unsatisfactory, as the sample may be a poor one or may, as sometimes is the case, be made by a toolmaker on a lathe and be more accurate in some particulars than is necessary. This might give the person who is quoting a wrong idea of what is desired or he may take for granted that the accuracy or finish is exaggerated. The ideal is a proper blue print and sample but the proper blue print is more important and takes precedence over sample.

Meaning of Concentricity Often Misunderstood

A specification which is difficult to define but often the subject of considerable controversy and even sometimes litigation is that of concentricity.

The best definition that we find for concentricity as related to screw machine products is that contained in the standard conditions of sales established by the Screw Machine Products Association, Eastern Division. This reads: "It is definitely understood that concentricity is not a dimension but it is the relation that one dimension is to any other and must be specified separately from dimensions. When concentricity limitation is specified, it is understood that it means the actual eccentricity allowable between two dimensions and that the actual eccentricity is one-half what is registered by a dial reading."

When concentricity is not specified, work is manufactured in the most economical manner without particular regard to concentricity, and quotations are made with that understanding.

In regard to material, the blue print should specify the class desired, such as steel, brass, etc. The words "cold rolled steel" (C.R.S.) indicate free cutting screw stock and this material is usually used if the word "steel" is indicated. If steel of a different analysis is required, say of higher carbon, or a nickel or chrome-nickel steel, this should be specified. It is becoming common practice to specify the S. A. E. numbers for special analysis stock; for example, the 2300 series for nickel steel, the 3100 series for chrome nickel, etc. The carbon content would be indicated by the last two numbers thus, 3120 means chrome-nickel steel of 0.20 per cent carbon.

The buyer should bear in mind, however, that specifying steel the analysis of which is different from screw stock may raise the cost, because many stocks

Some of the Points Emphasized for Guidance of Buyers of Screw Machine Products

BLUE prints should be submitted if possible as being more satisfactory than quoting from a sample, as the sample may not be perfect. Preferably both blue prints and samples should be submitted.

When specifying special steels the buyer must expect higher quotations than if the parts are made from ordinary screw stock, as high-carbon steels slow up the productiveness of machines.

Orders should range from 5000 pieces upward, as it is not economical to make a small number on automatic machines.

In the selection of thread sizes it is important to conform to those specified by the National Screw Thread Commission, as it adds to the expense of manufacture if odd diameters and odd pitches are requested.

It is not economical to hold up the production of machines to approve a sample.

such as higher carbon or chrome nickel material usually cannot be run at so high a rate of production for a given piece. It is the production per day from a given machine that largely influences cost.

The finish required should be specified. If heat-treatment, bluing, polishing, plating, and buffing are necessary, this should be shown on the blue print and in the case of polishing, whether one, two or three wheel polish is required.

It should also be borne in mind that it is not economical to make screw machine products when the quantity is relatively small, because the cost of tooling and the cost of setting up the machine will then be a very large proportion of the total cost and will have a direct influence on the price of the piece. Five thousand comparatively simple and fairly sizable pieces is about the smallest number that can be made economically on an automatic screw machine. In the case of smaller pieces and those of more complex nature, the quantities should be higher, to obtain a low price per piece or per thousand.

Special Threads Affect Cost and Delivery

In the selection of thread sizes, it is important to conform to those specified by the National Screw Thread Commission in either the coarse or fine thread series, the former corresponding to the old United States standard and the latter to the S. A. E. It adds to the expense of manufacture and to the time of delivery if thread sizes of odd diameters and odd pitches are specified, especially if the threads are to be of difficult form such as Vee, acme, square, Whitworth or something decidedly special.

If anything but the regular United States thread form and standard relation of diameter and pitches, it will be necessary to furnish gages to the manufacturer, as he will be unable to obtain them himself without extra expense. In the case of standard threads, the manufacturer usually would work to what is known as a "free fit" as specified by the screw thread commission's report. If closer fits are desired, "go" and "no-go" thread gages should be furnished by the buyer.

When threading to a shoulder is specified it is usually understood that the last full thread will not be cut closer to the shoulder than a distance of two threads and in the case of pitches finer than 32, never closer than 1/16 in. In connection with close-to-the-shoulder threading, it is always advisable in such cases to neck the piece to a width of at least two threads and preferably more. Other ways of doing away with close-to-the-shoulder threading, which is a difficult requirement, are to counterbore the tapped hole or make use of washers.

Female threads will be tapped usually to two-thirds the full depth of thread in accordance with the regular practice recommended by tap and die manufacturers, and the diameters will be governed by those produced from regular taps as furnished by recognized tap manufacturers. In the case of blind holes a full thread will ordinarily not be cut closer than five threads from the bottom or in the case of pitches finer than 32, never closer than 5/32 in.

It is well to repeat that it is very important to select the thread sizes from standard tables.** Quite often special threads are selected accidentally by the draftsman, who does not fully appreciate the importance of having a thread cut with standard tools, and once a practice of using a special thread is established, it is always difficult to change over to a standard. The selection of standard threads will result in much quicker delivery, lower cost and make feasible the use of more than one source of supply when desirable. It will also assure proper assembly, since the female threads and male threads can both be made with standard tools.

Wherever tolerances are established that are closer than the commercial limits mentioned above, or where dimensions cannot be readily gaged, as for example such features as the concentricity of two related

diameters or in the case of tapers, the buyer should arrange to furnish the manufacturer with gages or expect an extra charge for gages if made by the manufacturer. In connection with the use of gages, it is desirable to specify what class of fit is expected, for example, wrench, finger or free fit.

Problems of the Manufacturer in Estimating Costs

When the manufacturer receives the blue print and request for quotation, he is then faced with the problem of estimating his costs. In order to estimate intelligently, it is essential that the manufacturer thoroughly understand what is wanted by the buyer.

He first considers the amount of material required for a given number, say 1000 pieces, and from this figures his material cost. He will then figure the theoretical production obtainable on the particular style of automatic upon which he decides the piece will be made. From the theoretical figure he will make an estimate of the probable production per day and, with this as a basis, estimate the cost of production on the machine for a given quantity.

There will be a certain expense required in the production of the tools, which cost will have to be estimated and divided by the number of thousand pieces under consideration. It will then have to be estimated just how long it will take the set-up man to set up the machine and get it ready to run. This is non-productive time and adds to the expense of production. From this it is evident that small orders will have a higher cost per hundred or per thousand pieces, since the tool cost and the set-up time are practically fixed and are independent of the quantity required.

Next must be estimated the cost of any second operations that are necessary and this may involve some tooling or the preparation of some fixtures or some set-up work.

The manufacturer has to bear in mind that his machines must earn him so much per day and, if he does not get a sufficient amount for his product, he will be manufacturing at a loss and eventually will not be a reliable source of supply. No work can be produced continually at a loss and buyers must expect their sources of supply to make a profit on the business that they give them, just as they in turn expect to make a profit on the goods that they sell and which are assembled from these pieces. Too few buyers realize the service provided by the manufacturer of screw machine products. The latter is obliged to provide himself with a great deal of very expensive automatic machinery, with very experienced help and must be an experienced man himself. All of this investment in equipment and brains or experience must necessarily pay a dividend, or at least should.

Buyer Relieved of All Problems

The screw machine products manufacturer relieves the buyer of all problems as regards speeding up and maintaining high rates of production, the purchase of material, etc. He relieves the buyer of difficult planning, of designing tools and fixtures, of expert supervision and provides him with a good product in large quantities. Practically no investment or experience in this work is required on the part of the buyer. I believe that many buyers and users of screw machine products would be astounded at the amount of energy and high-tension effort that is expended in a screw machine products' factory.

When the manufacturer has completed his estimates and submitted them to the buyer, the latter compares the estimates with those from other manufacturers and makes his decision as to where the order is to be placed. In making this decision it is hoped that too much emphasis will not be placed on the matter of price. We have seen so many sad results from allowing price to be the deciding factor as to where the order should be placed. It should be borne in mind that most screw machine products are assembled into other parts and if they are not made properly the cost of assembly is often much greater than the cost of the parts themselves. The matter of service as regards delivery, quality of work and honest and square dealing are decidedly more important than the

**Tables of recommended thread sizes may be obtained from the Bureau of Simplified Practice, Department of Commerce, Washington.

matter of a few cents per hundred pieces. It is far better to pay a little higher price and obtain such products from a manufacturer who is known to be reliable and experienced.

When the order is placed it must not be expected that delivery can commence at once. The manufacturer is obliged to make up the tools and, unless he is unfortunately without many orders, he will not be able to set up machines on the work immediately. He may also have to order his material.

The Matter of Deliveries

The screw machine products manufacturer should be permitted to make delivery as rapidly as the product is manufactured, by partial shipments, as he is obliged to complete his run on one set-up and should not be obliged to spread his deliveries over a long period.

While samples of the work from the machine will be submitted to the buyer it is not economical to hold up production on the machine until approval is obtained and any changes in specifications taking place after the machine is started on its run can be made only at the buyer's direction and expense. Therefore, it is advisable to telegraph such changes.

When shipments begin and the goods arrive, it must not be expected that every single piece in a shipment will pass every requirement. There will undoubtedly be a small percentage of pieces that may not pass inspection but from a good manufacturer this percentage will be small.

The conditions under which screw machine products are manufactured on automatic machines are such that there is certain to be a small percentage of pieces not 100 per cent perfect. If the manufacturer

is requested to make 100 per cent inspection before the goods leave his factory, he will naturally have to increase his price for the piece. In this case, if specifications and tolerances should happen to be very rigid, his percentage of rejections will be still higher and naturally his costs will be higher.

If an unreasonable quantity of pieces is found by the buyer to be defective, the manufacturer should be notified at once so that he can take steps to correct the difficulty if the fault lies in method of production.

Due to the method of production it is natural to expect that the exact quantity specified cannot always be made. The manufacturer should be allowed a leeway of 10 per cent, either above or below. The quantity produced on the automatic machine is usually increased by 10 per cent over the amount ordered, to allow for any shrinkage, and this is the only way that the manufacturer can be sure of furnishing somewhere near the amount called for.

When delivery has been completed and it is necessary to place additional orders, these orders should, in fairness to the previous source of supply, be placed again with the same factory. It is possible that on the first order the manufacturer has lost money but, from experience gained, would be in a good position to make a reasonable profit on a second order. If the goods have been satisfactory a real service has been rendered that deserves recognition and reward.

It is usually poor policy continually to shop around. Oftentimes the manufacturer has been obliged to do considerable experimenting and planning to meet certain requirements and by the time he has finished the order he must be in a better position than any other manufacturer to deliver satisfactory goods on a repeat order.

New Blast Furnace Blower

Three Sizes, from 45,000 to 70,000 Cu. Ft.—Employs Constant-Volume Governor

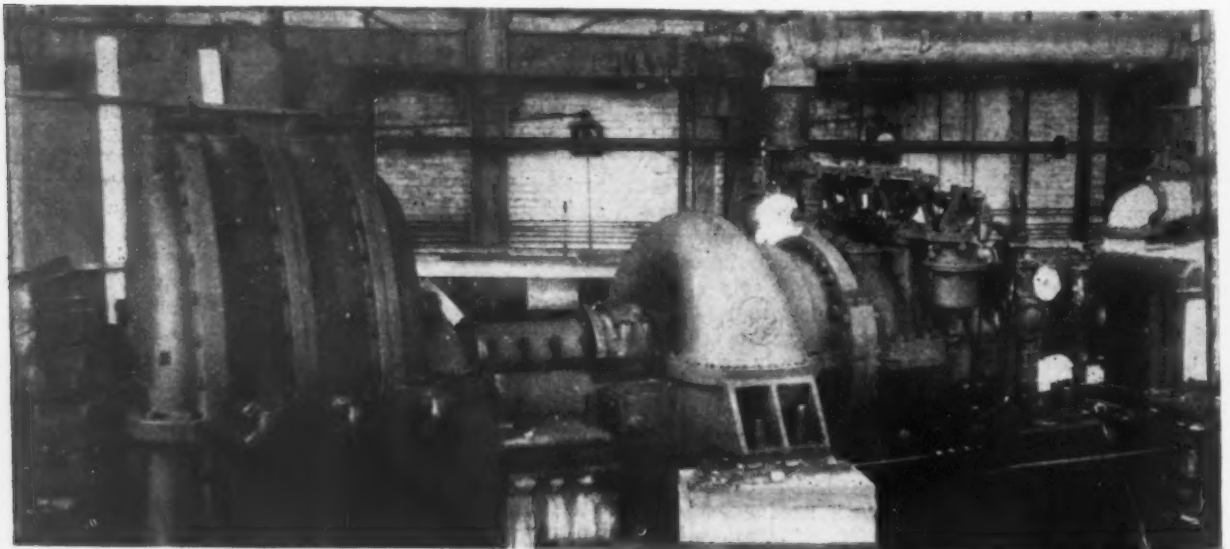
A new blast furnace blower, developed by the General Electric Co., has three main objects in view: reliable mechanical operation; high over-all efficiency; improved pressure-volume characteristics. The new design includes three sizes of machines to cover the range of American blast furnace requirements. Each unit consists of a blower and a driving turbine, each rotating element being supported by two bearings and the two rotors connected through a flexible coupling.

The turbine is the multi-stage type developed about three years ago for blower and generator drive. The compressor design was adopted after several years of study of the most efficient means of velocity-pressure

conversion, with efficient cooling of the air during compression. Instead of discharge vanes, previously employed for the conversion of velocity into pressure, the air passages immediately beyond the impellers are so shaped as to obtain more efficient conversion and improved pressure-volume characteristics.

Control of the machine is by a constant volume governor of new design, installed on the inlet of the compressor. This device automatically regulates the speed so as to produce the pressure required by the furnace at any instant. The governor, therefore, automatically maintains delivery of air to the furnace at a constant rate, regardless of periodic changes in the resistance offered by the furnace, and regardless of reasonable variations in steam pressure, superheat and vacuum.

A 45,000-cu. ft. unit and a 60,000-cu. ft. unit of the new design, recently tested at the Lynn plant of the General Electric Co., met all requirements. The third size is of 70,000 cu. ft. capacity.



Motor-Driven Blast Furnace Blower of 45,000 Cu. Ft. Capacity on Testing "Block." Designed for efficient conversion of velocity head into pressure, the machine is controlled by a constant-volume governor

Forecasting Stabilizes Operations

Program of General Motors Corporation Aids Formulation of Fundamental Policies—Uneven Production and Excessive Inventories Avoided

THE present forecasting procedure of the General Motors Corporation is in theory essentially simple and is based upon certain broad principles which are regarded as applicable to most other lines of manufacture.

An exposition of the corporation's forecasting program, or "systematic planning applied to the conduct of its business" was given by its assistant treasurer, Albert Bradley, in a paper read at the annual convention of the American Management Association, which was held at the Hotel Astor, New York, March 3, 4 and 5. The paper, the title of which was "Setting Up a Forecasting Program," was an outstanding contribution.

Four major factors, it was said, must be given consideration in setting up a forecasting program. These are growth; seasonal variations; condition of general business, and competition. The first three are economic factors that concern the industry as a whole. The first of these, growth, is dependent upon the increase of country's population and wealth, after a condition of stabilization in the particular industry has been reached. Seasonal variations are the difference in activity which may be attributed to the change in season, as distinct from other factors. The third economic factor, condition of general business, relates to the operation of those forces which are generated within the general business situation itself and which make for the alternating periods of depression, revival, prosperity, and crisis, usually referred to as the business cycle. In addition to these economic factors, each representative member of an industry is affected also by competition from other members of the same industry.

Program Serves Two Purposes

A forecasting program, it was pointed out, serves two separate and distinct general purposes. In the broadest aspect, it affords a means of gaging an operating program in terms of the fundamental policy of the corporation regarding the rate of return on capital investment, as related to the pricing of the product, and the conditions under which additional capital will be provided for expansion. The second and more frequent use of a forecast is as a tool for the control of current operations.

The forecasting program now employed by the General Motors Corporation was said to be a product both of past experience and present needs. It serves certain specific purposes related to the activity of a large and growing business; and also is the preventive medicine or antitoxin to work off certain ills which have afflicted the corporation in the past.

The General Motors Corporation is now primarily an operating concern engaged in the manufacture and sale of automobiles, their accessories and parts, and owning plants, properties and other assets of its manufacturing operations, which are known as divisions. Manufacturing plants are located in 32 cities in the United States and Canada, and there are seven assembly plants operating in foreign countries. The product of the car division is marketed through some 15,000 dealers all over the world, less than 4 per cent of the total volume being sold at retail by the corporation. The corporation is operated as a decentralized organization. Each operating division or subsidiary is in principle entirely self-contained and is responsible for the successful design, manufacture and sale of its product, subject to the general policies of the corporation. In order to coordinate the efforts of the various divisions and particularly to make available to each division the experience of all members of the family, there are various inter-divisional relations committees which

come together at frequent intervals. These committees are the general technical, general sales, general purchasing, operations and works managers committee. The fundamental policies of the corporation are enunciated by the executive and finance committees.

Return on Investment the Basis of Pricing Policy

In dealing with the forecasting program in relation to fundamental policies, it was pointed out that return on investment is the basis of the policy in regard to the pricing of product. But it must be understood, said Mr. Bradley, that the fundamental consideration is the average return over a protracted period of time. This long-time rate of return on investment represents the official viewpoint as to the highest average rate of return which can be expected consistent with the healthy growth of the business, and may be referred to as the "economic returns attainable."

The fundamental policy in regard to pricing of product and expansion of the business necessitates also an official viewpoint as to the normal average rate of plant operation. The percentage accepted by the corporation as its policy in regard to the relationship between assumed normal rate of plant operation and practical annual capacity, is referred to as "standard volume," and represents so far as practicable the economic situation of the industry, rather than any normal or any abnormal situation pertaining to a particular plant.

The corporation's fundamental price policy, once formulated, is completely expressed in the conception of "standard volume" and expected long-time average rate of return on investment. The price of any product which will satisfy these conditions is its "standard price." It is expected that in actual practice "prevailing price" will be above "standard price" at certain times, and below at other times, and it may never exactly coincide with the "standard price." The determination of "standard prices" was said to be desirable for two reasons: it affords a standard with which the actual prices or contemplated prices can be compared, so that variances can be given necessary attention or consideration, thus guarding against the possibility of unintentionally pricing either an entire line or certain models in a manner inconsistent with the fundamental price policy in the matter of return on investment. The second reason is that the price policy itself is thereby submitted to the test of experience so that if, over a long period of time, "standard price" cannot be realized, then the fundamental policy as to return on capital attainable in the business requires modification.

Forecast Predicated on Estimate of Volume of Business and Price

The forecast covering a year's operations affords an opportunity to consider a proposed program from the standpoint of the fundamental policy, since the matter of price must be dealt with, and this requires consideration of rate of return on investment and rate of operation in relation to capacity. The forecast must, of course, be predicated upon an estimate of the volume of business to be done and the price at which the product is to be sold. Given the two basic estimates as to the quantity and price and estimate of the year's earnings, the capital required to handle the business, and the per cent earned on the investment can be prepared.

The practice of the General Motors Corporation is for each car division, sometime prior to the beginning of the sales year, to submit to the executive committee a so-called "price study," which embodies the division's estimate of sales in units and in dollars, cost, profit, capital requirements, and return on investment, both at standard volume and at the forecast rate of operations

for the new sales year, all on the basis of proposed price. This "price study" in addition to serving as an annual forecast, also develops the "standard price" of each product; that is, the price which, with the plant operation and standard volume, would produce the adjudged normal average rate of return on capital which has been referred to as the "economic return attainable." Proposed prices can therefore be compared with the standard prices which express the corporation's fundamental policy, and a means thereby provided for the measurement of departures from the policy which are necessitated by competitive conditions and other practical considerations.

This method of analysis necessitates the establishment of standards of capital requirement and expense factors, representative of the normal average operating condition, in terms of their respective ratio to annual sales or annual factory cost of production, according to whichever is the more direct relationship. It was explained that the word "standard" as used in this connection represents the estimated normal average condition, not the goal of efficiency toward which operations are directed. A brief description of the development of these standards was given.

Forecast Permits Close Control of Current Operations

In outlining the use of a forecast scheme as a means of current operating control, Mr. Bradley said that the same factors, growth, seasonal variation, trend of general business and competition, must again be dealt with.

In regard to growth, it was said that while the industry has been subject to an unusually rapid rate of expansion in the past, the volume has now reached such large proportions that it seems altogether unlikely that tremendous annual increases will continue. The expectation is rather for a healthy growth in line with the increase in population and wealth of the country and the development of the export market.

The spring months always have been the months of heaviest retail purchases of motor cars by the public, said Mr. Bradley, in discussing the seasonal variation factor. Even the trend toward the closed cars, the proportion of which for the General Motors Corporation has more than doubled during the past three years and now amounts to over 70 per cent of the total, does not appear to have materially altered the seasonal trend. Seasonal variation, therefore, makes it necessary to have a greater number of cars available to retail purchasers at certain times of the year than at others. An analysis based primarily on the corporation's experience for the past three years indicates the following distribution by months:

	Per Cent		Per Cent
January	4.2	July	8.3
February	5.0	August	8.0
March	10.2	September	8.1
April	16.0	October	8.0
May	11.3	November	5.9
June	9.5	December	5.5

There must, therefore, be available for delivery in the peak month of April almost four times as many cars as during December or January and about twice as many as during each of the months, July, August, September and October. The peak three-months period, March, April and May, represent 37.5 per cent of the year, or half as great again as the rate based on distributing the year's business evenly throughout the 12 months.

It was pointed out that in order to operate economically and thereby offer the greatest value to the public, factories should operate on as level a line of production as can reasonably be attained, and that radical changes in production schedules should be eliminated as far as possible. This means that during months of low retail demand the surplus of cars produced over and above those purchased by the public must be stocked by the dealers, distributors and manufacturers to be liquidated in the months of peak retail demand. From the standpoint of economical distribution, on the other hand, it is desirable to keep finished stocks down to the minimum, since the storage of this product not only requires additional capital, but also expense for

insurance and other storage costs. There are also other undesirable elements.

The operating program of the General Motors Corporation is a compromise between the two plans. Factories vary their production schedules within the three limits established by (1) plant capacity, (2) the accumulation of stocks of finished product which are not excessive when viewed in their relationship to current retail demand, and the necessities of seasonal requirements, and (3) the maintenance of reasonably steady rates of operation with resulting benefits to employees through continuous employment and the avoidance of the economic loss which results from violent fluctuations in the rate of manufacturing operations.

The original estimate of the year's domestic sales volume is based upon an estimate of the number of cars which are likely to be sold to the public by the entire automotive industry, segregated into (1) the low-price group, (2) medium-price group, and (3) high-price group. The estimate for the industry is based upon actual experience in the last three sales years, giving careful consideration to the probable number of automobiles needed to replace those which will be worn out or otherwise destroyed during the coming year and an appraisal of the general business situation for the coming year.

The expectation of each car division is determined after giving consideration to the expected total amount of business available for its respective price group and the competitive situation of the division. These estimates concern a future period and must of necessity reflect an appraisal not only of the general business situation, but also of the effect of new models, price reductions and other factors not only by ourselves, but also by competitors, all of which must be weighed beforehand.

New Method Permits Quick Adjustment of Production Schedules

This procedure has been followed for the most part for the past six years. A step forward has been in the developing of a method which insures a change in its production schedule the moment actual experience indicates a change of the trend of retail deliveries to the public.

The first and controlling principle in the establishment of General Motor's production schedules is that they shall be based absolutely upon the ability of its distributors and dealers to sell cars to the public. Each car division now receives from its dealers every ten days the actual number of cars delivered to consumers, the number of new orders taken, the total orders on hand and the number of new and used cars on hand. Each ten-day period the actual results are compared with the month's forecast, and each month when these figures are received the entire situation is carefully analyzed to see whether the original estimate was too high or too low. If it is decided that the estimate was too high, the production schedule is immediately reduced; on the other hand, if the demand is greater than estimated, the production program is increased, provided the plant capacity permits. In this way the production program is compared month by month, in fact, ten-day periods by ten-day periods, and the necessary adjustments in the production schedule and in the estimate of the year's volume are made. In other words, instead of attempting to lay down a hard and fast production program a year ahead and stick to it regardless of the retail demand, the corporation now follows the policy of keeping production at all times under control and in correct alinement with the indicated annual retail demand, and the minimum accumulation of finished product in the hands of dealers for seasonal requirements, which the flexibility of production schedules permits.

Under the corporation's system, it was said, inventory and purchasers cannot get seriously out of line if the production schedule itself is properly controlled. Each operating division submits monthly a definite forecast of operations in the current month and the three succeeding months, covering sales and production each month and indicating the amount of investment at the end of each month and inventories and other items of working capital and also outstanding inventory

commitments. These forecasts, if accepted, constitute the authority for each division to proceed upon the indicated manufacturing schedule and to make forward commitments up to the requirements of the forecast.

The usual practice is to release immediately upon adoption of the schedule materials required for the following month, and to make definite commitments beyond that time, that is one month, only for those items which require a longer period for their manufacture and delivery to the plant.

Forecasting Procedure Stabilizes Operations

In discussing the results of the forecasting procedure of the General Motors Corporation, Mr. Bradley stated that increases or decreases in production schedules have been less violent than heretofore, and that operations at a more level rate and a closer scheduling of material have made it possible to manu-

facture a larger quantity of cars with a smaller amount of capital tied up in inventories.

Steadier employment for the workmen is shown by the fact that in 1925 the maximum number of employees was 93,284, the average 83,278, the minimum 68,085. Thus the maximum varied only 11 per cent and the minimum only 18 per cent from the average.

It was also stated that with the improvement in capital turnover it has been possible to pass on to the public not only saving in cost, but also to considerably reduce the profit margin per car without impairing return on investment. Large as has been the improvement in the corporation's own performance, the economic gain resulting to the 15,000 dealers in General Motors products, due to more closely aligning production with the movement of the final product into the hands of ultimate consumers, was said to have been even more marked.

Labor Becoming Fixed Charge

THE economic status of the wage earner is undergoing a revolution, according to Prof. Thomas N. Carver, Harvard University, Cambridge, Mass., who was the speaker at a general meeting on Friday morning, March 5. In commenting on the change he said:

"I predict that one result will be that wages will become more and more a fixed charge upon industry, and interest less and less a fixed charge. The overhead cost will be the wage bill and not the interest charge. Labor will have the first claim upon the proceeds of business; capital will take what is left."

The unique position of American wage earners is indicated by the average money wages paid by an American corporation with plants in several countries for the same kinds of labor engaged in producing identical products. These, as published by the Federal Reserve Bank of New York, are as follows:

In the United States.....	\$5.60
In England.....	2.28
In Germany.....	1.55
In France (outside of Paris).....	1.24
In Paris.....	1.35
In Italy.....	0.96

Growing Buying Power of Masses an "Economic Wonder"

Not only in money wages but in buying power American labor stands in a class by itself. According to various estimates, real wages in this country are from 20 to 40 per cent higher than before the World War. Moreover, a larger percentage of those of working age seem to be at work and the number of children per family has decreased slightly. This means that a smaller number of people are supported per income. All these factors have contributed to the surprising purchasing power of the masses which, Professor Carver declared, is a "veritable economic wonder."

"In this country," he added, "the bulk of the spending money is now in the pockets of the masses."

Catering to the rich, relatively at least, has become unremunerative. Fortunes are being made by supplying luxuries, or near-luxuries, to the great mass of the population through quantity output on a small margin of profit. The American laborer is dominating the whole production system and determining what shall be produced.

This new economic condition is producing a profound change in the spirit and attitude of labor. Newly acquired power, like newly acquired riches, may be abused, the speaker pointed out. We may soon be confronted with the question:

When does collective bargaining cease to be a means of defense for the poor and the weak and begin to become a means of extortion by the powerful and strong?

The wielding of financial power will also alter the attitude of labor. For some years the working population has been buying securities, not always of the corporations employing them. Moreover, savings bank deposits have increased two and one-half times in 10 years, and building and loan associations have expanded

even more. In five years 37 labor banks have sprung up, doing a combined business of \$100,000,000.

End of Class War in Sight

This indicates that labor and capital can no longer be put in water tight compartments. So long as more than half of a man's income comes from his labor he can, for academic reasons, be called a laborer, but he cannot be so classified for the purpose of preaching class war. The blending and overlapping of capital and labor makes it impossible to arouse enthusiasm for class antagonism.

In contemplating the recent change in the status of labor the question which logically arises is: Will it last?

American Labor's Greatest Menace is Mexican Peon

Professor Carver sees no reason why it cannot prove permanent. The greatest menace to the position of labor, in his opinion, is the importation of cheap labor from Mexico. There is virtually no restriction on immigration from that country, and inasmuch as the United States has an excess of business training and capital and Mexico a surplus of labor, the natural economic reaction is an exchange until the two nations approach a condition of equality. Cheap labor, however, means poverty. Furthermore, a large influx of Mexicans would introduce another race problem.

"The immigration of cheap labor from any source tends to depress wages and to concentrate rather than diffuse wealth," Professor Carver asserted. "Our greatest source of cheap labor at present is Mexico. It is no accident that brings hundreds of thousands of peons into this country. Mexico manufactures poverty by providing little employment for her masses. We are eliminating poverty in this country, except insofar as we import it, by developing our industries and farms and providing abundant employment at good wages for all who want it."

Efforts to break down the restrictions in the present immigration act have not ceased.

"Some subtle attacks are being made upon our present policy of immigration, such as the Wadsworth-Perlman bill, ostensibly to let in near relations of American citizens but really to enable us to get more cheap labor," the speaker added. "Anything of this kind is designed to undo the work that has already been done and to repeat that nightmare of low wages, widespread poverty, slums and race problems through which we went in the eighties and nineties of the last century."

How Labor's New Status May Be Preserved

The conditions necessary to preserve labor's new status were listed by the speaker as follows:

"Assuming that we shall continue the policy of restricting emigration and put the whole American continent on the quota basis; assuming also that our educational policy shall develop greater and greater effi-

ciency until something that can properly be called universal education is actually achieved; assuming also that thrift campaigns shall be carried on and that the small investors shall be adequately safeguarded against fraudulent promotions and stock selling campaigns of all kinds; assuming further that physical science progresses and that our inventors continue to be active and alert; and that our democratic ideals persist to the extent that every useful occupation is respected; that business continues to attract its fair share of the best products of our colleges and universities; and that every man, whatever his origin, is encouraged to make the most of himself, I do not hesitate to predict, first, that

our national dividend will continue to increase even more rapidly than our population, and not only that, but it will continue to be more and more widely diffused among all classes and occupations.

"As working people more and more become capitalists, it is probable that they will have more and more to say about the financing of corporations. They will probably continue to be more interested in their labor incomes than in their capital incomes. If they can be reasonably certain of a fixed labor income, they will be quite willing to take their chances on dividends, and will not insist on a fixed rate of interest on their investments."

Sales Methods That Stabilize

"**M**ARKETING Policies and Sales Methods that Stabilize" was the subject for discussion at a session for sales executives held Thursday afternoon. The first speaker, R. B. Flershem, vice-president and general manager of sales, American Radiator Co., Buffalo, amended the topic to read "Marketing Policies and Sales Methods that Tend to and Are Intended to Stabilize." He mentioned five factors which have an important effect on stabilizing prices:

1. Quantity
2. Place
3. Time
4. Annual Demand and Supply
5. Leadership

By "quantity" he referred to the relation of quantity purchases to prices. He recalled the time in the radiator industry when there were no fixed quantity differentials. The natural outcome of the lack of standards by which to measure the relative desirability of orders of different sizes was that overemphasis was placed upon obtaining quantity business until it was found contracts were being taken at below cost of manufacture. This caused the American Radiator Co. to send out printed prices to all customers with a fixed schedule of quantity discounts. This plan was adopted on Jan. 1, 1916, and in the first two months of that year the company showed a loss of 25 per cent in its gross business. Later, however, customers saw the advantage of the plan, and despite the obstructive tactics of competitors, the total business for the year was the largest the American Radiator Co. had done up to that time. This plan was successfully followed for five years, when it was superseded by another method.

In explaining what he meant by "place," Mr. Flershem stated that stocks of radiators are not carried by jobbers or dealers. Consequently, manufacturers are required to establish warehouses and distributing stations throughout the country. There are three cost factors incident to "place": (1) freight, (2) warehousing and distributing costs, (3) selling cost. Five per cent more than list prices is charged for less-than-carload shipments from warehouse than for carload shipments from a plant. Inasmuch as freight and selling costs are higher in sections of the country south of the Ohio River and west of the Missouri River, 5 per cent more than list is charged on orders for delivery in those territories. This plan has been found preferable to having a uniform price throughout the country. In the latter case the single price would have to be kept relatively higher to carry the extra cost of doing business in the West and South.

In his exposition of what he meant by the "time" factor, Mr. Flershem pointed out that the heaviest building permits are in the spring and that radiator orders ordinarily were delivered four to six months after permits were issued. This put a peak load on the plants in the fall. In its efforts to get out increased production at that time the company was burdened with extra costs resulting from night work, extra pay, the inefficiency of extra help, etc. To eliminate the seasonal variation in demand and in costs it was decided to offer inducements for the placing of orders during the duller seasons. For this purpose February, March

and April were selected as the months when the base, or lowest prices, would rule. In May and July, 2½ per cent was added to the base. In August, September and October—the period of peak demand upon the company's output—the differential above base was fixed at 5 per cent, and in November, December and January it was stepped down to 2½ per cent again. These differentials have had the effect of flattening out the demand curve, increasing the flow of orders from February to July inclusive, and decreasing them from August to December.

Another important factor bearing upon price stabilization is the relation between the moving annual supply and demand. Ordinarily building permits are issued about four months before radiators are bought. A study of building permits and production over a period of years has thrown much light on calculating future demand. This end is also subserved by the pooling of information by different manufacturers. Each month members of the boiler and radiator manufacturers' association report their respective productions, shipments and stocks, the totals of which give an illuminating picture of the condition of the industry as a whole.

Acknowledged and capable leadership in industry was the last factor emphasized by the speaker as essential to stabilization.

Standardization of Product a Stabilizing Factor

Standardization of product was mentioned by J. J. Slein, Graton & Knight Mfg. Co., Worcester, Mass., as an important prerequisite to stabilization. In the leather belting industry some years ago it was impossible for the buyer to make an intelligent comparison of prices and qualities because the manufacturers all had different specifications and brands. Standardization is now well under way and its benefits are making themselves felt.

Efforts to Stabilize the Machine Tool Industry

The machine tool industry is subject to sharp fluctuations, reaching higher peaks and swinging down to lower valleys than other avenues of trade, said F. B. Heitkamp, advertising manager Cincinnati Milling Machine Co., Cincinnati. In terms of business, it is the first industry to go down and the last to come up. One of the evils besetting machine tool makers is last minute buying. Many users will not purchase additional equipment until it is absolutely imperative and then they want deliveries immediately. Another difficulty confronting the industry has been seasonal buying. In this connection Mr. Heitkamp called attention to the fact that 40 per cent of his company's sales are to the automotive industry. A third evil is prosperity buying. The railroads, for example, buy when their earnings are good instead of having an established year-in and year-out policy of additions and betterments.

In an effort to find a solution for their problems the machine tool manufacturers first set out to educate themselves and their dealers. Five years ago they employed a general manager, Ernest F. DuBrul, and since that time they have been supplied with a monthly economic letter setting forth basic conditions affecting their industry. An important feature of this service

have been a "machine tool barometer" which shows in graphic form a composite of the orders of association members. A more recent development is a master curve of orders received from one industry, such as the automotive industry.

Progress towards cooperative advertising is being made through an association advertising committee. By study of the economic cycle it is possible to make a unified appeal that will have a maximum effect in a given phase of business. This plan contemplates the use of leading trade papers, notably the *American Machinist* and *THE IRON AGE*, and direct mail campaigns, Mr. Heitkamp said.

Referring more particularly to the research by his own company, the speaker said that an analysis of the potential market for its goods uncovered the following distribution of orders among various industries:

	Per Cent
Automotive	40
Electrical	8
Textile machinery	7
Railroads	7
Small machine	6
Engine and boiler works	3
Hardware	3
Machine tool	2
Schools and colleges	1
Agricultural	0.5
Governmental	0.5
Miscellaneous	22

In an activity forecast for 1926 based upon information from various sources, the company looks for 5 per cent less business from the automotive industry and gains of 30 per cent from the electrical industry, 25 per cent from the railroads and smaller increases from other sources. On the basis of this study an analysis is made of the probable demand for various sizes and types of machines.

A thorough canvass of prospects is another feature of the company's program. All prospects in a given district are listed and a record is kept of sales to them. If the company has failed to sell a given prospect, it ascertains the reasons therefor.

Sales quotas are established each year on the basis of forecasts. In 1923 sales were 98 per cent of the quota, in 1924, 96 per cent, and in 1925, 116 per cent. These quotas are not padded. The quota for a given year is the actual manufacturing program of the company. By planning ahead on a quota basis it has been possible to stabilize production and to improve deliveries.

Diversification of Production Flattens Demand Curve

Diversification of production has been the method employed by David Lupton's Sons Co., Philadelphia, to flatten out the demand curve, according to Clarke P. Pond, vice-president, who was a speaker in this session.

The company through engineering effort is constantly striving to broaden the usefulness of its prod-

ucts so that competitive pressure does not hamper its production plans. It is expected that the sale of residence windows alone, in the next few years, will take up any slack which might otherwise have developed from an increasing concentration of competition for business in older products. A study of the needs of the dealer has also proved in the interests of stabilization, because it has shown how few sizes he can carry and get the quickest turnover.

To Wipe Out Depressions, Prevent Booms

Psychology is not a dominant factor in the business cycle but it can be an important influence for stabilization, said J. H. Barber, staff assistant to the president, the Walworth Mfg. Co., Boston.

The way to wipe out business depressions is to prevent booms. A depression is the headache after overextension toward the elusive. Some tangible method is needed to find the point just ahead of a boom when conservative policies should be adopted. A valuable index is the quantity of orders received. This always moves ahead of prices or output. The final distributor is an excellent judge of business in his locality, as a rule. When he sees good business ahead, he stocks up. When the outlook is doubtful, he buys from hand to mouth.

Consumer Demand Essentially Steady

Consumer demand is essentially steady, with seasonal variations. With horizontal production, a company will produce a surplus in a depression to make up for a deficiency in a period of active demand. To produce stock in advance of sales, however, it is essential to have a dependable sales estimate. The Walworth Mfg. Co. has stabilized its business by liquidating its branch inventories at the time that it commences to build up stocks at its plants. It was found, for example, that the Kewanee, Ill., works produces 20 per cent more per employee in the winter than in the summer. Aside from the fact that foundry labor can work more efficiently in the cold months than in the heat of summer, there are far more applicants for inside employment in the fall than in the spring. Five years ago the bulk of orders from jobbers came in the spring and the peak of production was in the summer. Through the revamping of production policies the fluctuations in the financial requirements of the company have been reduced 40 per cent since 1921.

Price stabilization has also proved a boon to the company. Formerly there was a concentration of buying because of fear of non-delivery, fear of a shortage of goods, or fear of a price rise. The first fear has been dissipated by excellent railroad service, the second by the knowledge that the company maintains ample stocks, the third by the fact that the company's prices are stable.

Steady Employment Improves Morale

THAT it pays to plan and maintain a regular flow of work and employment was the opinion of several speakers at a group meeting for production and operating executives, held March 4.

Interest was shown in the outline of policies adopted by the Leeds & Northrup Co., Philadelphia, to minimize the effect of business depressions and the unemployment that accompanied them. These policies were explained by Charles S. Redding, treasurer of the company. The nature of the products manufactured by the company, electrical instruments, pyrometers, etc., require skilled employees, and stability of employment is important. The total number of employees is in the neighborhood of 500, many of whom have been with the company many years. Much attention is given to business forecasting and an attempt is made to prepare production schedules accordingly. A second policy is to increase sales effort, rather than decrease it, during periods of depression. Intensive study is made to extend the fields in which the company's product can be used, it being realized that, in widening channels of

consumption, the effect of a depression is minimized. Foreign business is also cultivated, because in most cases foreign cyclic conditions are not in phase with ours. Intensive research work is carried on, this being, from the employment standpoint, an important factor, as it extends the line of products. During dull periods this research work is increased rather than decreased.

When there is an increase in the normal demand for the company's products, this extra demand is taken care of by overtime work instead of by taking on more workers. If the increased demand becomes steady, then more workers are taken on and the overtime is diminished. When demand is slack, the workers are employed in building up inventory and also in maintenance work. It was stated that the company has taken care of several brief slumps by transferring employees to maintenance jobs. If the depression continues, then working hours are reduced and lay-offs start. This is the last step, and then the unemployment fund, instituted by the company in February, 1923, becomes operative. This fund is built up by taking 2 per cent each

week from the productive payroll. In arriving at the figure, 2 per cent, the company took its experience in the 1920 depression, which was considered as probably the worst that would have to be faced, and from this figured out what would be necessary to take care of a similar situation. The fund is in the hands of a trustee and the plan is to pay 75 per cent of their earnings per week to employees with dependents, and 50 per cent to those without dependents. The unemployment fund does not apply to employees getting \$2,600, or more, a year.

Guarantees Each Worker Full Pay for 48 Weeks

The employment guarantee policy of the Proctor & Gamble Co., Cincinnati, was discussed, a paper outlining the plan having been prepared by L. J. Zoeller, supervisor of the employees' service department of that company. Because of Mr. Zoeller's absence, E. S. Cowdrick, consulting engineer, read the paper. This policy is of national interest. It was instituted five years after the establishment of sales quotas and corresponding production scheduling. It guarantees full pay for 48 weeks in each calendar year, except in cases of fire, flood or other contingencies of the same category. There are also other reservations, one of which relates to transfers. With this arrangement there is a profit sharing plan. The big effect of the plan is that it stabilizes employment and it has attracted a better class of employee. The beneficial effect on plant morale—by eliminating the spectre of unemployment—was stressed, and there was said to be many collateral good effects. In the discussion that followed the presentation of this paper, one idea that seemed to be generally entertained was that regularization of employment creates waiting lists, reduces labor turnover and attracts the better quality of personnel.

The various steps taken by the Sperry Gyroscope Co., Brooklyn, N. Y., to stabilize employment were outlined by M. R. Lott, Continental Baking Corporation, but recently with the Sperry company. The company was organized in 1910, and its product, gyro compasses, etc., are specialized and unique. The work done is of a precision nature, and skilled men are employed. In considering, after the war, how stabilization of employment could be effected, it was seen that the first step would be to standardize some of the product and also standardize the man power. Accordingly it was decided to concentrate on the manufacture of two types of gyro compasses for commercial needs, permitting of more stable production. A training section was established in order to permit of transferring workers from jobs with which they were familiar to jobs with which they were not hitherto familiar. Several weeks of intensive training are given, and in addition foremen are encouraged to give men under them a variety of training within their departments. The training section is engaged on productive work, and in slack times absorbs men from the plant, giving out men, on the other hand, in busy times. When it becomes necessary to lay off workers, the company endeavors to find a place for them in other organizations.

Among other speakers at this session was Prof. Willis Wisseler of the Bureau of Business Research of the Ohio State University, who discussed the topic of the meeting, "Planning and Maintaining a Regular Flow of Work and Employment," in a comprehensive manner. In speaking of the social responsibility of maintaining continuity of production and employment, it was indicated that the humanitarian motive should not be isolated from the business motive. Regarding the devising of a common formula of regularization, it was said that not all industries are alike and they can't all proceed on the same basis. Conflicting practises are often justified because of particular conditions. The growing popularity of employment insurance was said to prove, perhaps, that it has been found to pay.

Employees Helped in Selecting Life Insurance

How the employees of the Western Electric Co. are helped to work out their own insurance program was outlined by W. A. Snedler of the controller's department of that company, at one of the group meetings

held on Friday, March 5. More than 40,000 workers are on the payroll of the company. It was pointed out that in industry generally, a large number of employees give little thought to their personal financial affairs, and that the lack of thrift presents some real problems for personnel departments. The Western Electric company encourages thrift among its employees and its thrift program is comprehensive. The first step was to get the supervisors in sympathy with the plan, and to this end a "Thrift Handbook," dealing with the how and why of thrift, making of family budgets, etc., was compiled and given to each supervisor. Thrift articles are published in the plant publication, *The Western Electric News*, and thrift posters are displayed on 1700 bulletin boards. Illustrated thrift talks are given at intervals. Because of the demand for the thrift handbook, sections of it were reprinted and distributed widely in pamphlet form. The reaction to the pamphlets and thrift talks was said to be very encouraging.

Insurance, the employees are told, should be the first consideration in any thrift plan. It was said that a large number of employees are interested in insurance, but that many of them are under-insured. A booklet on "Selecting a Life Insurance Policy," has been published by the company and from it the employee may learn the basic principles of life insurance, types of policies and their relative merits, relative cost of different types and general principles to be considered in the selection of a policy. In helping an employee in the matter of insurance, each case is considered as individual and is treated separately. The average salaried worker is encouraged to take the ordinary life policy, which affords the greatest protection at the least cost. It was stated that in all of its thrift work, the company has endeavored to keep away from anything that suggests paternalism. In helping an employee, no reference is made to any particular insurance company. As to the results of these activities of the company, it was said that although there is no way of determining how many employees have increased their insurance, there is reason to believe that the work has borne fruit. Insurance companies have reported that since the company started the campaign their agents have met with less sales resistance, and supervisors report that the men seem to be buying more insurance.

Employee Investments and Savings

At least 250 corporations in this country, with 1,500,000 employees, have stock subscription plans, according to Glenn A. Bowers, Industrial Relations Staff, Curtis, Fosdick & Belknap, New York, who addressed the general session on Friday morning. Mr. Bowers gave a detailed analysis of the results of a survey covering the plans of 150 corporations, having an average of 8000 employees.

A savings plan for employees was described by Edward Early, assistant superintendent Crompton & Knowles Loom Works, Worcester, Mass., in an address before a group meeting Friday morning. He pointed out that the number of people without funds at the age of 65 is still very large, the increasing prosperity of the masses notwithstanding. In Massachusetts it has been found that 69,000 people, 65 years of age and over, and 47,000, 70 years of age and over, have incomes of less than \$300 per year. The savings plan which his company adopted in 1919 is intended to prevent poverty in old age by encouraging providence. The scheme is simple. The company provides savings books from any one of five banks which the employees select and each week deducts from wages whatever amounts the workmen stipulate. These deductions are deposited in the employee's name in the bank. Withdrawals are permitted at any time. In fact, the employee can obtain his money from the company without going to the trouble of visiting the bank. The plan has a strong appeal because of its simplicity, flexibility and safety. There is no sacrifice of principal upon withdrawal. The workman who puts in a dollar, gets a dollar—plus interest—when he closes his account. Eighty-five per cent of those eligible under the plan are participants. The program is regarded as a valuable supplement to the company's old age pension plan.

Standard or Special Machines?

Numerous Considerations Enter the Problem— Probable Life of Product an Important Factor

SOME of the lines of reasoning and investigation which should be followed in selecting machine tool equipment were outlined by A. L. DeLeeuw, consulting engineer, New York, before the Metropolitan section of the American Society of Mechanical Engineers, held at the Down Town Club, Newark, N. J., March 3. The subject of Mr. DeLeeuw's paper was "Economic Considerations in the Installation of Standard and Special Machine Tool Equipment." W. F. Dixon, works manager of the Singer Mfg. Co., Elizabethport, N. J., presided at the meeting.

The problem of the selection of the proper kind of equipment, said Mr. DeLeeuw, is not confined to the large industrial establishment but is equally a problem of the small manufacturing plant and the jobbing shop. In the latter cases, however, it is mostly a question as to what type and size of machine shall be bought. As the plant becomes larger and approaches more the status of a quantity production plant, a new element is injected into the problem; namely, whether standard or special equipment shall be used.

In defining what is meant by the terms "standard and special equipment," it was stated that there is a wide margin where the two kinds may be said to overlap. A standard machine is one which can be bought in the open market according to the specifications of the manufacturer. If slight modifications are desirable, but of a kind that do not destroy the usefulness of the machine for the purpose for which it was originally designed, such modifications will not be considered as making the machine special. A special machine was defined as one which has to be purchased according to the specifications of the purchaser and which must in its entirety or partially be designed according to these specifications. In the one case, the specifications originate with the manufacturer of the machine and in the other case, with the purchaser. It was pointed out that even with these definitions, it is often difficult to say whether a machine is special or standard.

The considerations for determining whether the one or the other kind of machine shall be used were stressed as many and varied. Among the principal ones are: Cost of machine; cost of operation, either by standard or by special equipment; probable life of the piece to be made; whether a constant flow of this piece will go through the shop or whether it comes through in lots; whether the machine is applicable to one or more than one piece or operation; whether the machine can easily be changed over for a new piece or operation if the original piece or operation is made obsolete, and the resale value of the machine. Some of these considerations, such as the probable life of the piece, cannot be determined with absolute assurance.

Wrong Ideas As to Special Machines

It was said that there are a number of wrong ideas in the minds of many shop men and managers as to the desirability of using special machinery. One of them is that a special machine, particularly if it is automatic, is likely to give trouble. A single tool may break and stop the entire machine. A skilled mechanic may be required to repair the machine from time to time. And then unavoidable complexity of the mechanism may lead to more frequent shut-downs than would be experienced with a standard machine.

Though all of these things happen, said Mr. DeLeeuw, they should not be classed under the heading of "trouble." Rather should they be discounted beforehand. It is true that where a number of tools are used in one machine, the breakdown of one single tool will stop the performance of the entire machine. This, however, is not a trouble in the true sense of the word,

because it is known to exist beforehand. It is a condition which merely reduces that percentage of time during which the machine is in operation. Instead of a 100 per cent of the time, it may be in operation only 90 or 80, or even 50 per cent. If this percentage reduces the value of the machine to a point where it is less than that of the standard machine, so far as production is concerned, then, of course, such a machine should not be used. If, on the other hand, it is still economical as compared to the standard operation, the machine is desirable.

It was shown that because a skilled mechanic must give part of his time to adjustment and small repairs does not prove that the machine is not economically successful. Careful management, it was said, may overcome many of the so-called troubles. By carefully noting the average time during which the various tools can work before they have to be resharpened, it becomes possible to set a regular time at which all tools of the machine must be removed when they are still in working condition. All tools should then be replaced by sharpened tools, which should be on hand, thus avoiding to a large extent the necessity of frequent shut-downs. Having a stand-by machine would, it was said, alter this condition entirely; one of the two machines could always be in a condition to operate, so that a tool mechanic can work on one and the operator on the other. On the other hand, this arrangement gives increased initial expense. The method of figuring the effect on unit cost of each of these two methods of tool setting was interestingly outlined. Although the example given did not consider whether it was advisable to use a special machine at all, it did show some of the elements which must be considered when a choice of standard and special equipment must be made.

Probable Life a Complex Factor

The probable life of the product was stressed as perhaps the most important of other elements which must be taken into consideration. This element, it was pointed out, is interwoven with a number of others, such as resale value, applicability of the machine to other operations, etc. If a piece of equipment must be bought or made which is applicable to one piece only, so that the machine will have to be sold for scrap if this piece is no longer manufactured, then the saving effected by such a machine should cover the initial outlay, plus interest charges within the estimated period.

In determining the probable life of the product, it was said that in all cases a safe enough guess should be made, and that it was better to err on the side of too short than that of too long a period. Frequently, however, absurdly low estimates are made for the sake of being on the safe side. It was also pointed out that the matter of judging the probable life of a product becomes of less importance as the equipment is in a lesser degree of special nature.

One of the most common things in manufacture is that some dimension or some one feature of a piece is changed without changing the general characteristics. There is also the possibility that there are other pieces which are sufficiently close in general characteristics to the one for which the machine was built that it might be possible to change such a machine over from one piece to the other. Even if the machines were originally built for both pieces and one has been made obsolete, it is still useful to a certain extent.

In a factory which builds its own special equipment, the engineering department may design such machinery more or less on the unit system, so that if a piece is made obsolete or changed, it would be possible to discard certain units and replace them with others, thus

making a large part of a special machine available for a new operation.

Problem of Break-Downs On Special Machines

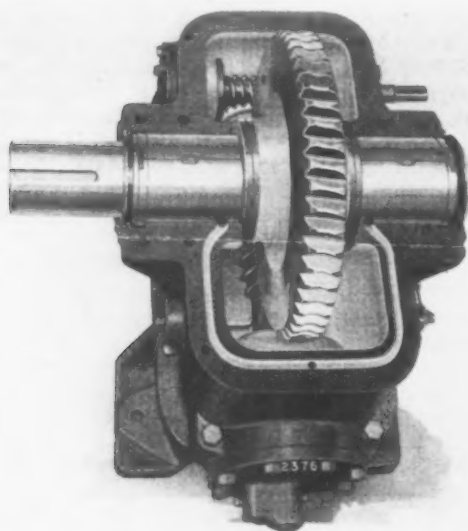
Regarding break-downs in using special equipment, it was pointed out that any machine whether standard or special may suffer a break-down at some time or another, but as a rule, a break-down in a standard machine is without serious consequences, because in practically all cases, it will be possible to substitute another machine for the one on which the operation is normally done. But this is not so when a special machine is used, and particularly not when a machine does a number of operations at once. It might be said that in case of a break-down, the various operations may be performed on some standard equipment, but as a rule, it is not possible to take jigs, fixtures and tools used on a special machine and apply them to the standard equipment. If such a special machine produces pieces necessary in the building of some product, then the entire schedule might be interrupted.

It is therefore necessary to do one of two things when using special equipment. Either keep on hand a sufficient amount of finished stock to give time for the repair of the special machine in case of a break-down or else have a stand-by machine. Which of the two is more economical depends, of course, on the quantity of stock which must be built up, on the value of the individual pieces and on the cost of a stand-by machine. As a stand-by machine would also to a certain extent cheapen the operation, preference should be given to solving the problem in this manner if the value of the stock to be kept on hand approaches the value of the stand-by machine. It was said that this stock is not an investment in the sense that a stand-by machine is, because it can be used in the ultimate product. But it should not be forgotten that if, for some reason, special equipment is no longer useful, the reason will be found in the fact that the piece can no longer be used for the final product, so that there will be a loss of either the value of the stock or the value of the machine.

Speed Reducing Gears for Ratios Exceeding 100 to 1

Two-step worm reduction gears for ratios between 100 to 1 and 8000 to 1, inclusive, for driving cooling tables, conveyors, stokers, heat treating furnaces, escalators, etc., have been developed recently by the De Laval Steam Turbine Co., Trenton, N. J.

The arrangement of the gearing may be noted from the accompanying illustration. One casing carries all the bearings for the high-speed worm shaft, the low-



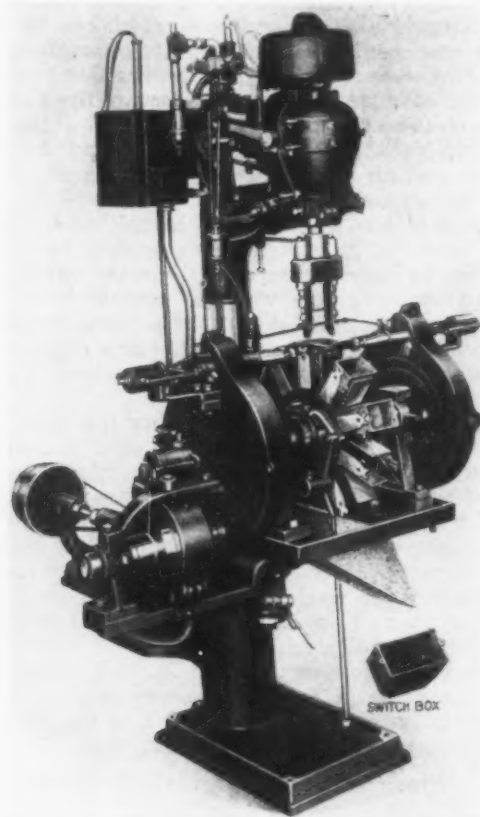
Double Reduction Worm Gear

speed worm shaft which also carries the high-speed wheel and the low-speed wheel shaft, thereby assuring accurate alinement and meshing. There are only three working members, excluding the ball bearings of the two worm shafts. End thrust and bending strains from the driving and driven machine are taken by flexible couplings.

The one-piece casing also serves as an oil reservoir, the oil being carried at such height that it touches the high-speed wheel and the low-speed worm at all times. In addition a positive oil pump draws oil from the reservoir and forces it through passages to the low-speed shaft bearings. This feature is stressed as particularly valuable as it is practically impossible, due to the low-speed of this shaft, to lubricate the bearings satisfactorily by splash. Suitable filling and drainage openings and oil cocks are provided for controlling the oil level. Escape of oil along the high-speed worm shaft is prevented by a packed gland. Seepage of oil along the low-speed shaft is avoided by the use of an oil slinger working between the end of the bearing and an oil guard surrounding the shaft.

Pneumatic Oscillating Tapper Arranged for High Production

The adaptation of the pneumatic oscillating tapping machine of the W. Gaterman Mfg. Co., Manitowoc, Wis., to the high production tapping of switch boxes is here illustrated. The machine is fully automatic in operation, the attendant being required merely to load the work into the dial feed, in which parts are automatical-



Machine for Tapping Switch Boxes

ly clamped. After the tapping operation has been completed the work is ejected automatically.

The machine is equipped with four horizontal spindles, two on each side, and two vertical spindles, as shown. To safeguard against breaking taps or stripping threads, the machine is equipped with the pneumatic oscillating device employed in the company's standard machine and described in detail in *THE IRON AGE* of Sept. 20, 1923. The rate of production is claimed to be 2000 holes per hour, each switch box having six holes tapped 8-32. This type of machine can be furnished for a variety of parts requiring the tapping of one or more vertical or horizontal holes.

Large Vertical Boring Mill

A large vertical boring mill recently built by the Betts works of the Consolidated Machine Tool Corporation of America, Rochester, N. Y., is shown in the accompanying illustration. It is pictured at work machining a 197,900-lb. turbine casting.

The table of the machine is 24 ft. in diameter and the swing is 32 ft. 3 in. The height under the tool holders is 12 ft. 6 in. and the travel of the tool spindles is 10 ft. The machine is driven by a 75-hp. variable-speed motor.

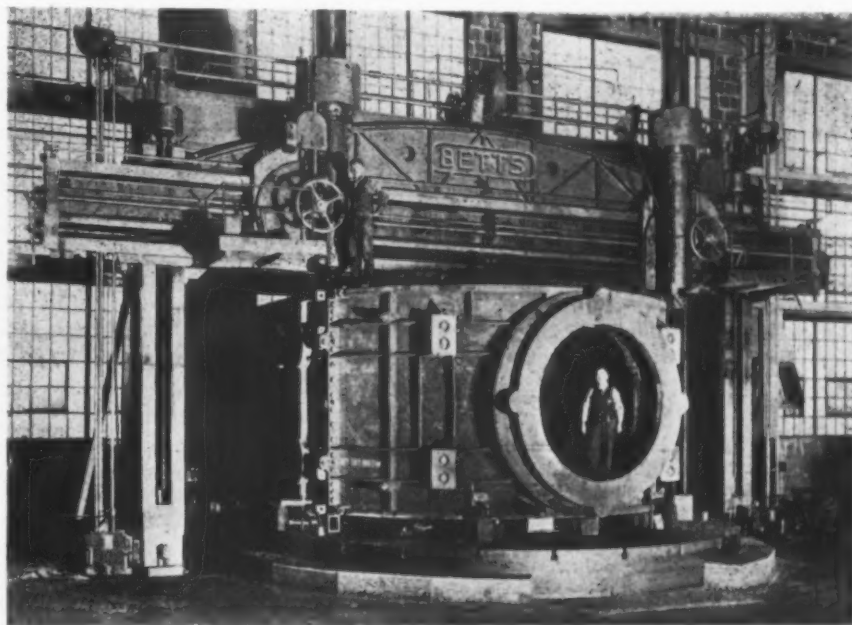
Three mechanical speed changes are provided through inclosed steel gears in connection with the 3 to 1 ratio of the motor, which gives a wide range of table speeds. All driving gears, including the large table gear, are of steel.

The bed, table and uprights are said to be of unusually massive proportions, to resist the strains of heavy cuts on large work. The crossrail is of heavy construction, with metal extending backward between the uprights to provide adequate stiffness, and is reinforced at the top with a wide, heavily ribbed cross brace. It has a narrow guide for saddles and clamping to uprights is accomplished by means of air operated gibs on the inside and outside of each upright flange.

Each saddle is equipped with a platform from which the operator may control all motors by means of push-buttons. Levers for engaging vertical or horizontal feeds, vertical or horizontal power rapid traverse, and for reversing the direction of travel are centered at these platforms. Close hand adjustment levers and hand traverse control for tool spindles, are mounted within convenient reach. Duplicate stationary levers are located on each side of the machine.

The tool spindles are steel forgings. They have screw feed and are balanced by means of suitable ring-type counterweights. They may be readily raised or lowered by hand in addition to the regular power movement, which in some cases is more convenient than operating the vertical power rapid traverse. The tool spindles may be swiveled conveniently for angular work.

A 25-hp. motor, mounted on top of machine, is used for raising and lowering crossrail, and for driving the



Boring Mill Machining a Turbine Casting Weighing Approximately 99 Tons. Each saddle is equipped with a platform from which the operator may control all motors

power rapid traverse to saddles and tool spindles. Feeds are obtained through sliding gears with independent feed box for each side of machine. Forced lubrication to the annular bearings on bed is provided by means of a special motor-driven pump, and ample lubrication is supplied to all other bearings.

Design of Welded Joints to Be Discussed

Papers on the design of welded joints in the automobile industry, design in piping installations, and design of welded joints in tanks and containers, are planned for presentation at the technical sessions of the annual meeting of the American Welding Society, which will be held in the Engineering Societies Building, New York, April 21, 22 and 23. The subject of welding designs will be discussed under eight or more heads as follows: Stresses, kinds and amounts; accessibility of position; technique; type of joints; materials; thermal considerations; tightness; and tests. It is planned also to have papers on the welding of structural steel.

The first day, Wednesday, April 21, will be given over largely to committee meetings. At the meeting of the gas welding committee, of which S. W. Miller, consulting engineer of the Union Carbide & Carbon Research Laboratories, Long Island City, N. Y., is chairman, the progress of the various sub-committees, including those on materials for welding, high temperature welding and training of operators, will be reviewed. The electric arc welding committee, which is headed by H. M. Hobart, consulting engineer, General Electric Co., will discuss the arc welding of non-ferrous metals and the results of tests relating to the fundamentals of arc welding. The educational committee, with E. H. Ewertz, general manager of the Moore plant of the Bethlehem Shipbuilding Corporation, presiding, will meet on the evening of April 21.

An inspection trip to the Metal & Thermit Cor-

poration's plant at Jersey City, N. J., is planned. The business session, to be held on the morning of April 22, will be followed by the technical sessions. There will be a meeting of the American Bureau of Welding, which is the research department of the welding society, on the morning of April 23. Among the social features will be a dinner dance to be held on the evening of April 22.

January Bookings of Fabricated Steel Plate Work

WASHINGTON, March 2.—Bookings of fabricated steel plate, based on reports received from 36 firms, amounted to 24,467 tons in January, representing 36 per cent of capacity, according to the Department of Commerce. This compares with 31,585 tons, or 47 per cent of capacity, in December. Of the January bookings, 8025 tons were for oil storage tanks, 890 tons for refinery materials and equipment, 2277 tons for tank cars, 2286 tons for gas holders, 1720 tons for blast furnaces and 9179 tons for stacks and miscellaneous uses.

Plans for the new Chicago Machinery Mart are now well under way and construction will probably start within the next 30 days. This building is to be erected just south of Jackson Boulevard, with frontage on both Canal and Clinton Streets. It will be 12 stories in height with foundations of ample size to provide for 6 to 8 additional stories. There will also be a large garage with special rates for occupants of the building.

Business Analysis and Forecast

BY DR. LEWIS H. HANEY

DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

Statistical Data Concerning the Chief Consuming Industries Indicate That:

IRON and steel consumption continues at a high level and is likely to be well sustained throughout the year.

There are no indications that production at the present rate is out of line with the trend of current requirements.

The volume of freight car orders is encouraging but no great improvement in locomotive business is yet in sight.

Despite the large volume of building contracts awarded and construction contemplated, structural steel sales are disappointing.

Increased operating schedules for automobile manufacturers, together with increasing stocks of cars in dealers' hands, may foretell additional price resistance in that field, with consequent curtailed demand.

ACTIVITY in those industries which are the chief consumers of iron and steel continues at a high level. This is probably the most reassuring factor in the situation. Purchases may be curtailed for a time, but eventually consuming industries must come into the market. The only danger to the prosperity of the iron and steel industry, during a period of lull in buying such as has occurred in the opening months of 1926, is that iron and steel producers may not readjust output sufficiently to prevent an accumulation of stocks and thus allow buyers too great an advantage when they return to the market. Inasmuch as a rather prompt check was applied to production schedules early this year, it seems probable that the foregoing danger is not great at the present time.

The situation is illustrated in Fig. 1 showing the trend of the composite activity of iron and steel consuming industries, together with the trend of steel ingot output. (Both trend lines are adjusted to eliminate the usual seasonal variations and thus approximate the true trend.) The significant fact revealed by the chart is that a fairly high level of demand, whether actual or potential, exists—one that fully maintains the normal growth in the iron and steel consuming industries. During 1925, particularly, the composite demand line showed a relatively steady and normal upward trend at about the average rate of recent years.

A comparison of the trend of demand with the trend of ingot production shows that the former is still a little above the level which would be required to justify present steel producing activity. *There is as yet no indication that the trend of steel production in the aggregate is out of line with the trend of total requirements.* Actual purchases have been postponed of late

owing to great uncertainty as to prices, but unless a much sharper decline in industry than now seems probable is to occur, the orders should be forthcoming before long.

Likely to Be Well Sustained

WHEN consideration is given to the various particular industries which go to make up the composite demand curve, we find a mixed condition. Railroad traffic slumped somewhat in January. The same may be said of automobile production—in both cases remembering that seasonal variations are eliminated. Exports of steel, moreover, while gaining in January, failed to do so as much as usual in that month. On the other hand, building activity, as measured by contracts, held up better than usual in the opening month of the year, and activity in the petroleum industry showed a gain. Mining was in general well sustained at about the average of the last six months. The result is that no considerable net change appears to have occurred in January.

What of the outlook for the future? In the case of the petroleum and railroad industries a good demand for iron and steel is practically certain. Railroad traffic may not reach such high levels as last year, but it will be large and the carriers will sooner or later have to do some of the buying which they postponed during 1925. The outlook for the oil industry is quite good and the demand for drilling materials and line pipe should be satisfactory. Unfortunately the outlook for the building and automobile industries is less certain. That building will be large during the spring months is generally agreed, but some decline is probable thereafter. Much the same may be said of the automobile industry. The present outlook for farm demand is also

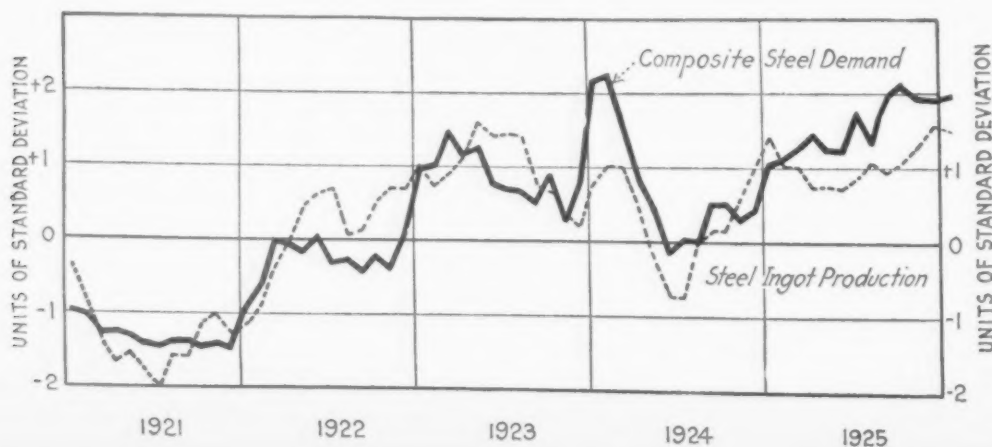


Fig. 1—There Is No Indication That Current Steel Production Is Out of Line With the Trend of Consuming Requirements

In This Issue

No indications that iron and steel production is out of line with consumption.—Activity in chief consuming industries suggests continuance of good business.—Page 700.

Productivity of foundry labor increased 30 to 50 per cent by installation of sandslingers and conveyors.—Nash Motors Co. also enabled to make \$50,000 reduction in flask equipment, as result of changes.—Page 677.

Will too much construction have unfavorable effect on present prosperity?—Speculative building has been on wane for some time: building by owners not likely to cause any economic disturbance.—Page 711.

First automatic Pilger mill in this country started at Delaware Seamless Tube Co., Auburn, Pa., Jan. 20, 1926.—Method of making seamless tubes subjects billet to much forging action, thus calculated to aid the quality of the metal materially.—Page 681.

Special machines present problem to shop in case of breakdown.—Since no other machine can be called upon to do the work, a sufficient supply of pieces, such as are usually made by its aid, must be maintained: this should be remembered when considering purchase of machine.—Page 697.

Claims bituminous coals should be classified by method approximating that used to evaluate iron ores.—Measurement by B.t.u.'s has not been generally accepted: suggests carbon as determining factor for coal, as iron is for ore.—Page 685.

"You will be absolutely safe in a steel-frame building in a thunderstorm"—said Steinmetz. Steel dwellings also safer than wood for earthquake and tornado zones; freedom from mice and vermin a factor.—Page 686.

Only 70,000 unionized machinists last year, as against 330,000 in 1920.—According to J. E. Nyhan, National Metal Trades Association; only 7 per cent of country's workers now belong to A. F. of L.—Page 708.

What if there had been no United States Steel Corporation?—Would the immense sums necessary for 41,000,000 ton expansion in country's steel ingot capacity have been forthcoming to smaller, disconnected concerns?—Page 710.

If special steels are specified for screw machine products, a higher cost may be expected than if ordinary cold-rolled steel is specified.—Special steels may slow up machines and lower output; now common practice to specify by S. A. E. numbers for special analysis stock.—Page 688.

"Immigration of cheap labor from any source tends to depress wages and concentrate wealth," says Prof. T. N. Carver, Harvard.—"Anything of this kind is designed to repeat that nightmare of low wages, widespread poverty and race problems of the eighties and nineties."—Page 693.

Each department of motor company makes annual sales forecasts for guidance of production departments.—Close check-up of current sales enables quick control of production schedules and consequent low inventories, as well as more uniform average plant operation.—Page 691.

Radiator manufacturer uses curve of building permits to forecast sales.—Boiler and radiator makers pool production information to mutual advantage when studied in light of building volume.—Page 694.

Machine tool company thinks 1926 business from electrical industry will be 30 per cent better than last year.—25 per cent gain anticipated from railroads, 5 per cent loss feared in automotive industry.—Page 695.

At least 250 corporations with 1,500,000 employees now have stock subscription plans.—Many methods used to encourage such subscriptions, as well as insurance, and other employee investments and savings.—Page 696.

Jones & Laughlin ruling scale must be applied by May 29.—Interstate Commerce Commission sets date for final action on mileage scale.—Page 705.

Business items in a nutshell: February construction contracts reported at \$389,000,000, largest February in history; January steel furniture shipments (\$2,650,000) largest in more than year; January exports of machinery \$34,590,000, largest since last April, save for December; February steel ingot output 1 per cent more than February, 1925.

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Forecasting for Profit

WHEN a great corporation employs departmental forecasts for guidance in financial and production policies over a period of six years, it indicates that such forecasts have proved their worth beyond the shadow of a doubt. It also suggests that other corporations, not now using sales forecasts for the budgeting of finances, the control of inventories or the planning of production schedules, might well investigate the possibilities in such a system.

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For News Summary See Reverse Side

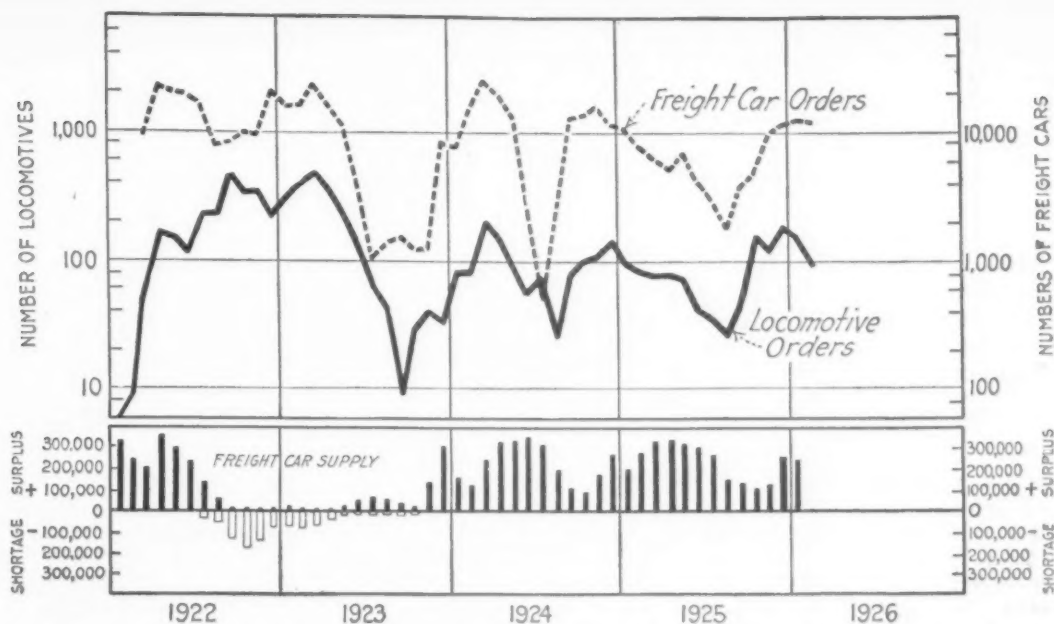


Fig. 2—Freight Car Orders Have Thus Far Been Fairly Satisfactory but No Great Improvement in the Locomotive Situation Is Seen as Yet

not so bright as could be wished. The prices of grains and cotton have recently been declining and at present the probabilities are that they will continue to work toward somewhat lower levels. One must conclude that the trend of iron and steel consumption is not likely to show much expansion during the year, but that as a whole it is likely to be well sustained.

Freight Car Orders Encouraging

THE outstanding fact revealed in the second graph is the fairly satisfactory volume of freight car orders. Such orders have run over 10,000 during each of the last three months, and it may be noted that this is the first time in recent years that the three months, December, January and February, have shown such a steady volume. Considering the apparently good condition of railroad equipment and the surplus of freight cars, this is a decidedly good showing.

The situation as to car surplus and shortage shows no material change: there is practically no shortage of freight cars and the surplus at the end of January was the largest at that time which has existed in any year since 1922. Contrary to last year, however, the car surplus has recently been declining, falling from 250,935 at the end of January to 227,511 on Feb. 23. No reason is apparent why a good volume of freight car orders should not continue, making due allowance for seasonal variation.

Locomotive orders in January and February combined were a little better than a year ago. It remains true, however, that locomotive orders are few and no great improvement is yet in sight.

Structural Steel Uncertain

THE salient point in Fig. 3 is the fact that structural steel bookings have been so small in comparison with building contracts awarded. Such contracts were very large in January, while structural steel bookings have on the whole declined sharply since October to a point only a little above January, 1925. This appears to be the sharpest continuous divergent movement in any of the last five years. It indicates one of two things: either contracts awarded are not being pushed to completion and, therefore, are not resulting in steel orders, or the new contracts are not for a type of construction which requires so much steel. The former alternative appears to be the more probable.

The number of square feet of floor space in building contracts in January was 65,550,000. While this figure represents a considerable decline from December, the decline was less than usually occurs and consequently our adjusted index rose. Contemplated new construction also increased more than usual in January.

Structural steel bookings, on the other hand, at 179,950 tons in January, were rather low. The figure is a little over that of last year, but is considerably

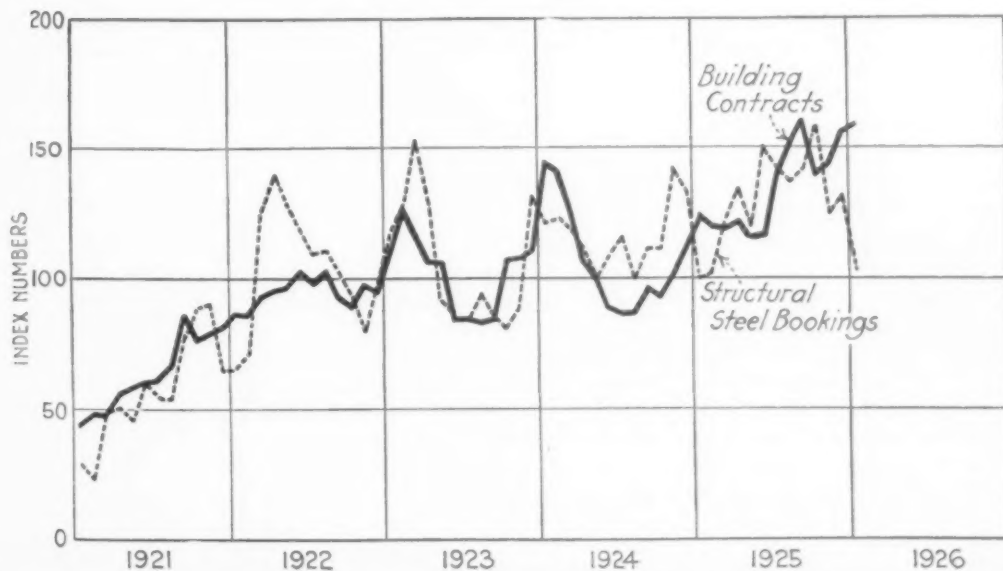


Fig. 3—The Divergence Between Structural Bookings and Building Contracts Awarded Indicates That Contracts Are Not Being Pushed to Completion as Rapidly as Usual

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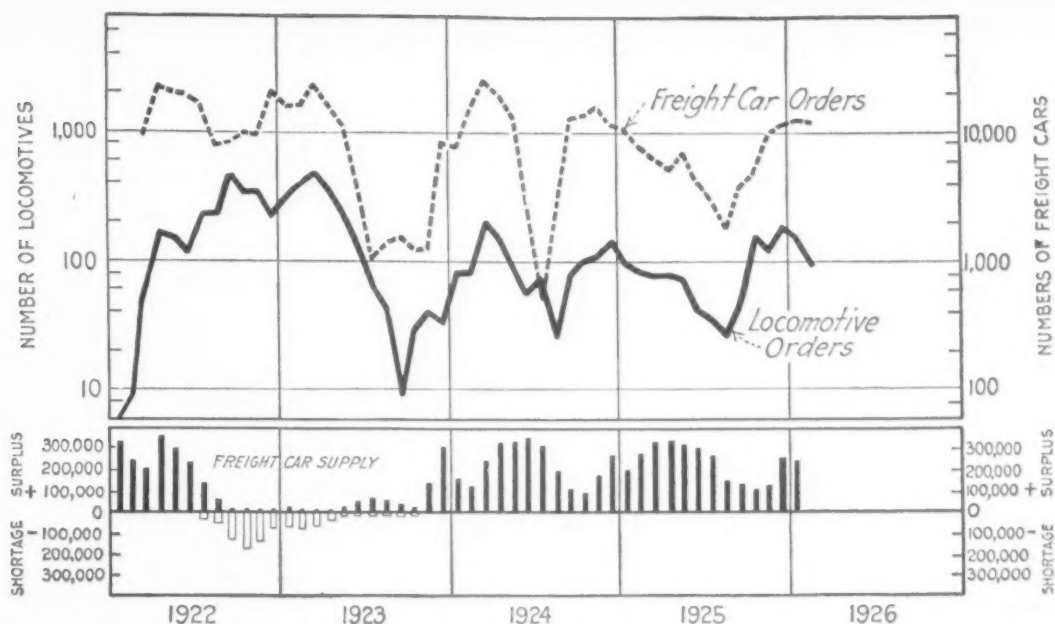


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Locomotive orders in January and February combined were a little better than a year ago. It remains true, however, that locomotive orders are few and no great improvement is yet in sight.

Structural Steel Uncertain

THE salient point in Fig. 3 is the fact that structural steel bookings have been so small in comparison with building contracts awarded. Such contracts were very large in January, while structural steel bookings have on the whole declined sharply since October to a point only a little above January, 1925. This appears to be the sharpest continuous divergent movement in any of the last five years. It indicates one of two things: either contracts awarded are not being pushed to completion and, therefore, are not resulting in steel orders, or the new contracts are not for a type of construction which requires so much steel. The former alternative appears to be the more probable.

The number of square feet of floor space in building contracts in January was 65,550,000. While this figure represents a considerable decline from December, the decline was less than usually occurs and consequently our adjusted index rose. Contemplated new construction also increased more than usual in January.

Structural steel bookings, on the other hand, at 179,950 tons in January, were rather low. The figure is a little over that of last year, but is considerably

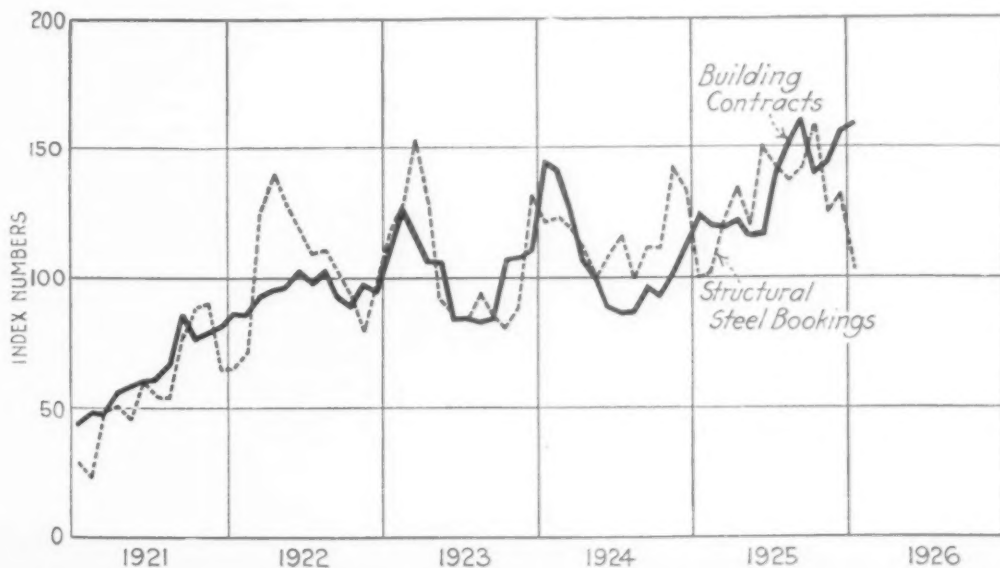
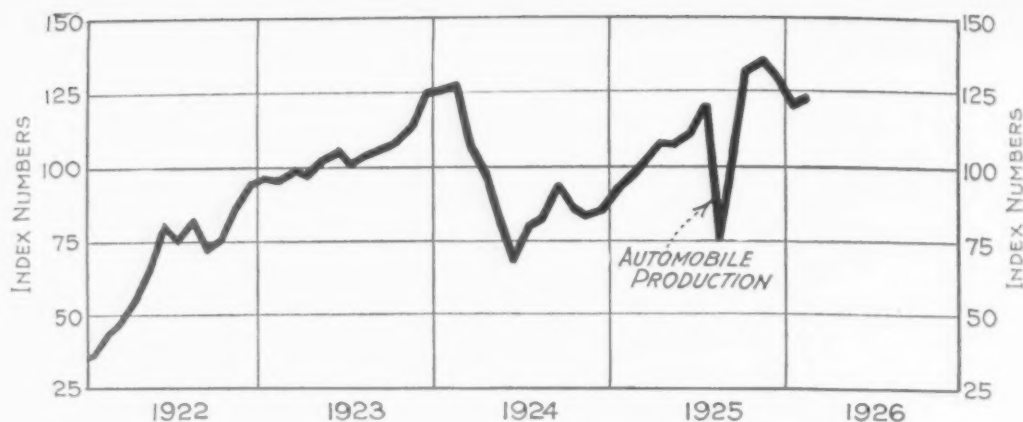


Fig. 3—The Divergence Between Structural Bookings and Building Contracts Awarded Indicates That Contracts Are Not Being Pushed to Completion as Rapidly as Usual

Fig. 4—With Dealers' Stocks of Automobiles on the Increase and Production Schedules Being Increased Some Pressure for Price Concession on Steel for Automobile Production Is Foreseen



under January bookings of 1923 or 1924. Seasonal movements are very irregular in this case. The most that can be said is that there have been January declines in the last three years and that probably some seasonal gain will occur in March. In fact, structural steel awards made in the latest week reported at this writing were the best of any week thus far in 1926.

In view of the probability that building activity will show some decline later in the year, it does not seem probable, however, that the demand for structural steel will return to the high levels reached in 1925.

Curtailed Automobile Demand Foreseen

OUR fourth chart shows the trend of automobile production, due allowance being made for the merely seasonal ups and downs. It shows that the total production of all kinds of motor cars in the United States and Canada picked up a little in February after a period of readjustment during December and January. Allowing for seasonal changes, the peak of automobile activity was reached in November last year. The production then fell more than usual for the season through January, when an output of about 315,000

motor vehicles occurred. The February estimate is for over 364,000 vehicles—an increase of more than 15 per cent. This is slightly greater than the usual February gain.

Recent reports indicate increased operating schedules for most of the Detroit manufacturers. Nevertheless the outlook for the industry is not particularly bright. Large production for a time is almost certain, but very keen competition is in sight and is likely to be attended by price cutting before the season is over. We note that the sales of passenger cars by the dealers are declining as compared with receipts by dealers and that consequently stocks are accumulating in the hands of the dealers. Judged by the sales of the General Motors Co. it seems probable that dealers' stocks of new cars in January were larger than at any time since the middle of 1924. Used cars are also accumulating in dealers' hands to such an extent as to constitute a serious problem.

Pressure for price concession on those items of steel required by automobile manufacturers is, therefore, probable, with curtailment in demand in the second half of the year.

The schedule of the next installments of Doctor Haney's analyses follow: March 18—Position of iron and steel producers; March 25—The general business outlook.

Simple Method of Reducing Inventory

Under the above heading, the National Machine Tool Builders' Association has issued a bulletin calling attention to a method devised by the Pratt & Whitney Co., Hartford, Conn., by which this company has succeeded in reducing its inventory of screw sizes or any other items of two dimensions. The diagram reproduced shows how the plan is worked out.

The standard lengths are listed in the left-hand column, and across the top are listed the standard diameters as column headings. Every alternate space is checked out, and the check-outs are staggered. Only the items appearing in the blank spaces are carried in

stock, thus reducing the stock carried by one-half.

The designer, in choosing a size, may find that at first sight he would choose a diameter of $\frac{3}{8}$, and a length of $\frac{13}{16}$. Referring to his table, he finds this is checked out. He then decides whether the diameter is more important to retain than the length, in which case he takes either the $\frac{3}{8}$ length, or the $\frac{7}{8}$ length in the $\frac{3}{8}$ diameter. On the other hand, if the length is the more important dimension to retain, he has his choice between $\frac{5}{16}$ and $\frac{7}{16}$ diameter. This method gives him four choices, and there are not many cases where one or the other of these four choices will not serve all practical uses, as well as the size originally thought of.

Length	Diameter							
	1/4	5/16	3/8	7/16	1/2	9/16	5/8	
7/16	X		X		X		X	
1/2		X		X		X		
9/16	X		X		X		X	
5/8		X		X		X		
11/16	X		X		X		X	
3/4		X		X		X		
13/16	X		X		X		X	
7/8		X		X		X		
15/16	X		X		X		X	
1		X		X		X		
1-1/8	X		X		X		X	

Method Employed by Prominent Machine Tool Builder for Keeping Down Inventory of Screws and Other Items

Mileage Scale Must Be Applied

Commerce Commission Orders Jones & Laughlin Scale of Rates
Be Put into Effect by May 29

WASHINGTON, March 9.—The Jones & Laughlin scale of rates will become effective on or before May 29.

This much discussed matter became a settled issue on Friday of last week when the Interstate Commerce Commission entered an order definitely putting the scale into effect on the date stated. It took this action only after it had become convinced that it was necessary as a means of compelling railroads in Central Freight Association territory to apply the new scale. The order affects rates on finished iron and steel from Pittsburgh, Woodlawn and Johnstown, Pa., Buffalo, Wheeling and Benwood, W. Va., Steubenville, Ohio, and Youngstown to St. Louis and points in Indiana and Illinois. Nothing is said in the order about the new rates from the Chicago district to the same destinations. It is assumed that reference to rates from Chicago was omitted because the commission was recently advised by Illinois Classification territory railroads that they are prepared to file on March 15 tariffs to comply with the decision, which was reached on April 15, 1925, and made public two days later.

The decision itself carried no order except under the long-and-short haul section, but pointed out that the carriers would be expected within 90 days to readjust their rates in accordance with the findings. The Central Freight Association carriers together with mills in the Pittsburgh and nearby district, however, unsuccessfully sought reopening of the case, being displeased with the decision. The railroads declared application of the scale would be difficult. The protesting mills wanted the establishment of rates recommended by Examiner Disque, calling for the equivalent of 80 per cent of the sixth class rate. At present, fifth class rates apply.

Under the circumstances it remains to be seen if the Illinois Classification lines will file tariffs on March 15 to become effective upon the regular statutory notice of 30 days. It is pointed out that if they should do so, the advances provided in the decision on rates from the Chicago district would go into effect on April 13, while the rates from the Pittsburgh and nearby districts would remain unchanged until May 29. The assumption is that the Chicago mills would protest against such action, urging that the increased Chicago rates not be made effective until the reduced rates from the Pittsburgh and surrounding districts become operative. The order provides for filing of the new tariffs upon statutory notice, and calls for a continuation of the existing differential of 1.5c. per 100 lb. from Johnstown, Pa., over Pittsburgh.

The decision has the effect of reducing from 1c. to 2c. per 100 lb. the rates from Pittsburgh, but leaves the Pittsburgh-Chicago rate of 34c. per 100 lb. unchanged. The scale applying from Pittsburgh ranges from 6c. per 100 lb. for a distance of five miles and under, up to 42c. per 100 lb. for 640 miles and under 620 miles. The Pittsburgh-St. Louis rate is reduced from 43c. to 41c. per 100 lb., while the Chicago-St. Louis commodity rate is increased from 17.5c. per 100 lb. to 24.5c. per 100 lb., an advance of 40 per cent. The result is to reduce to 16.5c. per 100 lb. the differential between the rates from Pittsburgh and Chicago to St. Louis instead of the existing differences of 25.5c. favorable to Chicago.

The application of the rates will be awaited with a great deal of interest, not only as it affects the new rates themselves, but also the groupings and intermediate territories. The decision of the commission said that no substantial objections "to reasonable groupings appear of record, and in applying the rates herein prescribed groupings may be employed, provided the rates from and to each of such groups, and in the aggregate, average substantially the same as if made from and to each point separately under the scale prescribed."

The scale, together with other details, including specific rates that will prevail, was published in *THE IRON AGE* of April 23, 1925, pages 1213 to 1215, in connection with the decision.

Rate Change May Be Blocked

Ohio Mills Expected to Ask Suspension of Tariffs
Prepared on Mileage Scale

PITTSBURGH, March 8.—Central Freight Association railroads are believed to have already checked in rates from Pittsburgh, Youngstown, Wheeling, Buffalo and Johnstown in preparation for the Interstate Commerce Commission's order of last week calling for the publishing of new tariffs to points in Indiana and Illinois and to St. Louis in keeping with its decision in the Jones & Laughlin rate case. Among local steel company traffic officials, however, there is a common belief that so far as immediate results are concerned, the move is nothing more than a gesture.

Railroad traffic officials realized soon after the decision was rendered that steel companies located in Cleveland, Canton, Massillon, Marion, Ironton and Portsmouth, Ohio, which did not intervene in the case and were not recognized by the decision, would want to preserve their advantages into the territory involved, and therefore decided to revise rates from those points on the basis of the Jones & Laughlin decision. It was found that this resulted in a greater advantage to those points than under the former alinement of rates, and since it was not compulsory that they be included, the revision was finally limited to the points mentioned in the original decision.

Under the order of the Interstate Commerce Commission, Pittsburgh, Youngstown, Wheeling, Johnstown and Buffalo will have a distinct advantage in rates based on the distance of the haul. Consequently, it is believed that publication of the new rates will be followed by a request for suspension by the northern, central and southern Ohio producers. It usually takes time for an investigation to be completed, and in the meantime the rates are in suspension.

The decision in the original case was unsatisfactory to Pittsburgh steel companies, particularly the company mentioned as the complainant. It was not the intent that Chicago producers should have placed on them the burden of increased freight rates, but that Pittsburgh, on direct demand, and other points on intervention, should have rates proportionate to those from Chicago. In other words, in place of fifth class rates, Pittsburgh wanted commodity rates which, with the usual price differentials, would have placed Pittsburgh on practically even terms with Chicago in much of the territory which is tributary to Chicago mills chiefly because of freight advantages.

The destination territory embraced in the revision order includes the St. Louis district, all of the State of Indiana and that portion of Illinois south of a line starting at Joliet and running down through Streator, Peoria to Grafton, the line marking the boundary between the Central Freight Association and Western Trunk Line territories.

What Mileage Scale Rates Will Mean If Adopted

Herewith is a table of the new and present rates to typical points in the affected territory. It will be observed that Pittsburgh district mills will pay 1c. per 100 lb. more, when and if the new rates become effective, to get to Evansville, Ind., and that the old charge is continued to Vincennes, but to other Indiana points lists there is a reduction of from 2c. to 3c. per 100 lb.

The new rate to Peoria, Ill is $\frac{1}{2}$ c. per 100 lb. higher than the old one, and the old rate of 34c. is continued to Chicago. The rates to Springfield and Moline are cut 2c., and the rate to St. Louis shows a like decrease at 41c. per 100 lb.

Comparison of Rates on Finished Steel Per 100 Lb.
Under Present and Proposed Tariffs

From To	Pittsburgh		Youngstown	
	New Rate	Present Rate	New Rate	Present Rate
Indiana:				
Anderson	\$0.28	\$0.305	\$0.26	\$0.29
Elwood	0.29	0.31	0.26	0.29
Evansville	0.37	0.36	0.36	0.36
Fort Wayne	0.26	0.29	0.23	0.275
Hammond	0.32	0.34	0.29	0.32
Indianapolis	0.29	0.31	0.27	0.30
Kokomo	0.29	0.31	0.27	0.30
Muncie	0.27	0.30	0.245	0.28
South Bend	0.30	0.32	0.27	0.30
Terre Haute	0.33	0.34	0.31	0.32
Vincennes	0.35	0.35	0.33	0.34
Illinois:				
Chicago	0.34	0.34	0.31	0.32
Moline	0.41	0.43	0.38	0.40
Peoria	0.39	0.385	0.36	0.355
Springfield	0.39	0.41	0.37	0.36
Missouri:				
St. Louis	0.41	0.43	0.39	0.38

Illinois Carriers to File Tariffs

Western Railroads and Shippers Regard New Mileage Scale Rates Inevitable

CHICAGO, March 9.—The order recently issued by the Interstate Commerce Commission on docket No. 15,110, now makes certain that rates on finished steel within the territory covered by the Jones & Laughlin case must be advanced on or before May 29. Shippers and carriers in the Indiana and Illinois territory, believing this to be the inevitable outcome, even without a formal order, have decided to file at an early date freight tariffs conforming to the requirements of the decision.

The final agreement reached between the Illinois carriers and the shippers was on the basis of rates for the entire Illinois Freight Committee territory covering Illinois, southern Wisconsin, eastern Iowa along the west bank of the Mississippi River and also west-bank points in Missouri. The new schedule establishes rates from St. Louis and Chicago to groups of destinations. From all other points of origin rates will be on the Jones & Laughlin scale. At a later date schedules from other producing points will be filed on a basis comparable with groups established from Chicago and St. Louis.

Under the proposed tariffs the rate between Chicago and St. Louis is 22c. per 100 lb., and rates from Chicago to various groups are as follows: To the Peoria group, 16 $\frac{1}{2}$ c.; to Davenport, Moline and Rock Island, 17c.; Muscatine and Burlington, Iowa, 19c., and to Quincy, Ill., 20c. Rates from St. Louis to various groups are as follows: To Dubuque, Iowa, 23c.; to Clinton, Iowa, 20c.; to Burlington, Iowa, 18c.; to Quincy, Ill., 15c., and to the Peoria group, 16 $\frac{1}{2}$ c.

On Aug. 19, 1925, the Illinois carriers submitted to the shipping public maps showing the proposed grouping and rates from Chicago and St. Louis, with the provision that rates from other producing points of Illinois would be grouped and rates published on a comparative basis. The shippers, however, unanimously rejected the proposal, which was based on very small groups of origin and destination.

The shippers' committee held a session on Aug. 25 for the purpose of discussing the carriers' proposed plan and to formulate a substitute, but found that the time was too short to enable both parties to reach an agreement and permit the carriers to publish rates effective on the date set by the commission. A suspension was then asked for, and it was granted by the Interstate Commerce Commission.

The shippers continued negotiations and later submitted a counter proposal, which the carriers immediately rejected. Negotiations were continued with the carriers with the result that they later accepted, with some slight modification, the plan proposed by the ship-

pers. The action of the shippers' committee approving the plan does not deprive any individual of his right to protest against, or from asking suspension of, the tariffs.

The complainants, Nov. 2, 1925, filed a petition with the Interstate Commerce Commission to reopen the case, principally on the grounds that the present scale does not produce sufficiently low rates on the long hauls. About the same time the Central Freight Association carriers filed a petition with the Interstate Commerce Commission for a reopening, alleging that the rates prescribed were too low for the short intermediate hauls. These petitions were denied. In the meantime tariffs could not be published to become effective on Jan. 8, 1926, as set by the Interstate Commerce Commission, and a further postponement was granted until Feb. 25, 1926.

Cost of Change to Metric System

War Department and Railroads Give Figures to Congress Committee—Machine Tool Builders to Be Heard

WASHINGTON, March 9.—The War Department and the great railroad interests of the country, together with the American Railway Express Co., officially opposed adoption of the metric system at a hearing on the Britten bill before the House Committee on Coinage, Weights and Measures, Thursday, March 4. The railroads estimated that it would cost them more than \$412,000,000, with a continuing annual cost of \$79,970,000.

This was the first organized opposition expressed against the bill at this session of Congress. Proponents of the measure have already presented their testimony. Machine tool builders from the various producing sections of the country will be heard in opposition on March 18 and 19. A majority of the committee apparently is in favor of the metric bill, and plainly indicates that it wants it reported favorably as soon as possible, with the hope of getting action during the present session of Congress in both the House and the Senate. While it is believed the bill will be defeated, it has a great deal more support than its opponents have believed.

The attitude of the War Department was expressed by Col. W. H. Tschappat, Ordnance Department, designated by the Chief of Staff to appear in opposition to the measure. Representative Britten closely questioned Col. Tschappat as to whether he was actually representing the entire War Department or only certain bureaus, Mr. Britten declaring that Gen. John J. Pershing, now retired, had approved the bill.

Col. Tschappat told Representative Britten that the enactment of the bill would create difficulties for the department in the mobilization and procurement of supplies for a period of many years after the mobilization program had been in effect. He pointed out that there would be particular difficulty in making the change to the metric system unless it uniformly applied both to the manufacture and sales of supplies.

As the bill is now drafted, it seemingly exempts the manufacture, but inasmuch as it provides for the buying or selling on the metric basis after Jan. 1, 1935, it was the point of Col. Tschappat that a dual system would be set up which would create confusion. The same point was made by the railroad representatives, who contended that if the metric system were applied it should be made uniform as to both manufacture and sale of commodities.

Railroads State Reasons for Opposition

The position of the railroads was presented through spokesmen for the American Railway Association. They included Alfred T. Thom, general counsel; John R. Leighty, special engineer for the Southern Railway; J. V. Neubert, engineer, maintenance of way, New York Central, and W. P. Wiltsie, chief engineer, Norfolk & Western. The American Railway Association repre-

sents the bulk of the mileage of the Class 1 railroads of the United States.

Mr. Thom made the opening statement for the railroads and also appeared in behalf of the American Railway Express Co., dealing with the general effect the change would have, while the engineers took up estimated costs, etc., as would be reflected in the specific items that would have to be transported from the English to the metric system. In this connection the change in shop machinery tools, etc., was estimated by Mr. Leighty at \$216,000,000.

Mr. Thom declared that the establishment of the metric system would inevitably create confusion, misunderstanding among shippers, litigation, and the great difficulty of training employees to the change. He said that if the new system were to be established it should be made effective universally both as it applied to sale and manufacture, and that there should not be a system prevailing in one section or State with another system in another section or State, else interstate commerce would become chaotic. Mr. Thom said that inasmuch as the proposed law, which would be administered by the Department of Commerce, would be compulsory after Jan. 1, 1935, as it affects sales and transportation charges, it probably would force manufacturers, railroads and others to adopt the metric system altogether because of their relationship to and association with Government transactions. He said that it is not conceivable that the Government could buy the many lines of industry on one basis and industry produce on another basis of weights and measures.

Dealing with the subject from an engineering point of view, Mr. Leighty and other engineers told the committee of the change that the railroads would have to make in measurements in replacing materials and building new units. He said that in 1924 the railroads of the country spent somewhere in excess of \$2,000,000,000, of which approximately \$634,000,000 was for material. It was declared that it may safely be assumed that the additional cost, due to the necessity of buying special sizes or using sizes that do not fit, would be at least 10 per cent or somewhat more than \$60,000,000, which would continue indefinitely as an addition to the maintenance cost and probably would not become materially less for at least 30 years.

Virginia Furnaces Want Lower Pig Iron Rates

WASHINGTON, March 9.—A complaint against rates on pig iron from blast furnaces in Virginia to points in Maryland, Pennsylvania, Delaware, New Jersey, New York and New England was filed last week with the Interstate Commerce Commission by the Virginia Pig Iron Association. The complaint is made part of a petition filed by the association on May 15, 1925, asking for an investigation of the rate. It is stated in the complaint that while formerly 60 per cent of the output of Virginia iron was marketed in the destination territory mentioned, in recent years comparatively little movement has taken place because "of the rate being complained of, and the territory in question has been virtually lost as a market." Virginia iron, it is stated, is sold in direct competition with iron shipped from Alabama, Pennsylvania and New York and particularly from furnaces in eastern Pennsylvania and Baltimore.

The complaint asks for reasonable rates from Virginia furnaces and the elimination of "the present preference to Pennsylvania, New York, Maryland and Alabama furnaces."

Coal Freight Tariffs Case Reopened

WASHINGTON, March 9.—The Interstate Commerce Commission has reopened the Lake cargo coal case for possible further hearing. Reopening had been asked by Pittsburgh and eastern Ohio operators, who claim the rates on coal shipped to Lake Erie ports are discriminatory in favor of West Virginian and east Kentucky mines.

May Build Cast Iron Pipe Plant

Lavino Furnace Co. Considering Project to Use Output of the Reusens Stack—No Definite Decision Yet

In an effort to reach a solution of the economic difficulties faced by the blast furnaces of Virginia, which affect also other furnaces along the Atlantic Seaboard, the Lavino Furnace Co., Bullitt Building, Philadelphia, owner of the Reusens blast furnace, Reusens, Va., is considering the building of a cast iron pipe foundry adjacent to its furnace. No definite decision has been reached, but the company has received estimates on the cost of the work and may have an announcement to make soon.

The Reusens furnace, which like other Virginia furnaces, has been operated intermittently during recent years, has a daily capacity of about 175 tons of iron. It is the intention of the Lavino Furnace Co., if present plans go through, to build a pipe foundry that will use about 100 tons of iron a day, but there will be sufficient flexibility in the equipment to permit an increased operation so that the entire output of the blast furnace may eventually be used. The plan for the foundry contemplates the charging of cold pig iron and scrap into the cupolas, but the company has given thought to the possibility of duplexing hot metal from the furnace by means of an electric furnace.

By-Product Coke Ovens for Youngstown and Massillon

The Central Steel Co., Massillon, Ohio, in furtherance of its program toward becoming self-contained, has placed the order for a by-product coke plant together with all essential by-product and benzol equipment and coke and coal handling machinery. The plant will consist of 49 Koppers-Becker combination ovens with a carbonizing capacity of approximately 1350 tons of coal daily. That would mean 492,750 tons of coal annually and on a basis of 70 per cent yield 344,925 tons of metallurgical coke a year. W. E. Hartman is consulting engineer for the Central Steel Co.

The Republic Iron & Steel Co., Youngstown, will add a battery of 43 Koppers-Becker combination ovens to its existing plant in Youngstown. This battery is rated as capable of carbonizing approximately 1100 tons of coal daily, or 401,500 tons annually and upon completion will give the company a total of 247 ovens, with an annual coal carbonizing capacity of 1,939,800 tons, from which on a 70 per cent recovery, there would be 1,257,860 tons of metallurgical coke.

Malleable Castings Anti-Trust Hearings

WASHINGTON, March 9.—Announcement has been made by the Department of Justice that the case against the National Malleable & Steel Castings Co., et al, will be heard in May. The proceeding is the result of an indictment charging the association and its members with violation of the Sherman anti-trust law. The department has announced that it is making a special effort to dispose of a number of important pending anti-trust cases within the next few months.

War Business Council to Meet

WASHINGTON, March 9.—The War Department Business Council will hold its first meeting at the War Department on Saturday of the present week. The council is made up of civilians from the industrial and business world. The council is cooperating with the War Department in connection with its program for industrial mobilization. Among the members of the organization are James B. Bonner, manager of sales United States Steel Corporation, Washington; Howard Coonley, president Walworth Mfg. Co., Boston, and Gerard Swope, president General Electric Co., New York.

The Agricultural Problem

National Industrial Conference Board Gives Some Figures on Farmer's Status

The agricultural problem has been the subject of study for nearly a year by the National Industrial Conference Board.

Our agricultural exports declined 20 per cent in volume from 1900 to the beginning of the war, and while in 1900 the value of our agricultural imports amounted to less than one-half of that of our exported farm products, our agricultural imports by the time the war began amounted to 83 per cent of our agricultural exports in value. Since the war the expansion of our farming industry has not been able to keep step with our population growth, and agricultural imports are increasing despite the fact that tariff protection has been given some branches of domestic agricultural production.

The report finds that the farmer's share in the national income, which had risen quite rapidly from 1880 to 1900, since then has shown a tendency to decline, excepting during the few war years. In 1880 persons engaged in agriculture received 31 cents for every dollar of national income received by persons engaged in all other occupations. In 1900 his proportionate share had increased to 47 cents. It grew rapidly during the war, until in 1918 his relative share was 98 cents, but in 1921 it had decreased again to 43 cents.

Actual earnings of the farmer in 1924 in return for his labor are computed by the board at \$730 on the average, as against average earnings of \$1,256 per wage earner in the manufacturing industries in the same year, average earnings of \$1,572 by transportation workers, \$2,141 earned by clerical workers, an average of \$1,678 earned by ministers, \$1,295 by teachers, about \$1,650 by government employees, and an average of \$1,415 per worker in all groups other than farmers.

In summing up the causes of the farmer's difficulties, the report declares that while 60 per cent of the farmer's income depends on world conditions of supply, demand and costs, which are out of his control, most of the elements entering into the expense of operating the farm, that is the cost of agricultural production, are determined by domestic conditions which place the costs for the farmer on a higher level of values than the world level of values which determines the bulk of the farmer's income. **Having to produce at a level of high costs, the farmer must meet competition which, producing at lower cost, limits the market for his surplus in accordance with the abundance or scarcity of world crops.**

Management Association Plans European Tour

Plans have been completed by the American Management Association for a "management mission" to Europe, members of which will leave New York, July 10 and return to New York Aug. 27. The purpose of the mission is to provide an opportunity to observe the best business methods and to visit the leading executives and other authorities on management and economic conditions in Europe.

The mission will arrive in Liverpool July 18. Two days will be spent in Manchester, it being planned to visit the plants of Hans Renold, Ltd., the British Westinghouse Co., and the Ford Motor Co. There will also be a dinner conference on management problems in England. One day will be spent in Birmingham and five days (July 23-27) in London. Conferences will be arranged with the Ministry of Labor, National Institute of Industrial Psychology; Industrial Fatigue Research Board and other organizations. Visits will be made in Letchworth, Sheffield and York.

One day will be spent in Antwerp and Brussels, and Cologne will be visited in connection with a trip to the Ruhr district. The plant of the Bohler Steel Co., at Oberkassel, Germany, will be inspected on Aug. 2 and there will be a conference with representatives of the

German steel industry on the "Ruhr problem." At Neusse the works of the International Harvester Co. will be seen, and an entire day spent in the plant of the Krupp Co. at Essen. Three days, Aug. 4, 5 and 6, will be spent in Berlin. Plants that will be visited include the Borsig Locomotive Works, the Ludwig Loewe Machine Tool Works and the Allgemeiner Elektrizitäts Gesellschaft. There will also be conferences with the Federation of German Employers, Society of German Engineers and other organizations.

In Italy the plant of the Breda Locomotive Co. at Milan will be inspected and also that of the Fiat Automobile Co. at Turin. Two days will be spent at Geneva, Switzerland, and a day at the Schneider works at Le Creusot, France. At Lyons the party will visit the plant of the Berliet Automobile Co. and at Paris the Renault and Citroën works will be inspected. One day will be spent in visiting the reconstructed areas and one day in visiting the battlefields.

Daily programs have also been arranged for non-technical members of the mission. The complete itinerary of the tour may be obtained from the managing director of the American Management Association, W. J. Donald, 20 Vesey Street, New York.

Testing Society Committees to Meet in Providence

The customary spring meeting of the various committees of the American Society for Testing Materials is to be held this year, March 17 to 19, at the Providence-Biltmore Hotel, Providence, R. I. The following committees are scheduled to hold various sessions on the three days:

A-1 on steel; A-5 on corrosion of iron and steel; B-1 on copper wire; B-2 on non-ferrous metals and alloys; B-3 on corrosion of non-ferrous metals and alloys; D-1 on preservative coatings for structural materials; D-9 on electrical insulating materials; D-11 on rubber products; D-14 on screen wire cloth; section, committee E-1, on tests of thin sheet metals; joint research committee on effect of temperature on the properties of metals; joint committee on effect of phosphorus and sulphur in steel, and committee on tests, joint committee on phosphorus and sulphur.

Most of the metals committee meetings have been scheduled for Thursday and Friday, March 18 and 19.

Union Membership Declining, Says Nyhan at Metal Trades Meeting

Although labor unions continue active in all branches of American industrial life, they are having a struggle to maintain their numerical strength, according to figures by J. E. Nyhan, secretary National Metal Trades Association, at the twenty-first annual meeting of the Boston branch at Young's Hotel, Boston, on Wednesday evening, March 3. For instance, there were 330,000 unionized machinists in this country in 1920, but in 1925, according to Mr. Nyhan, the number was but 70,000, a drop of 80 per cent.

In outlining the industrial development of the United States he brought out the fact that, according to the latest Government figures available, there are 41,000,000 workers in this country. Of this number 9 per cent belong to labor organizations and about 7 per cent are members of the American Federation of Labor. Mr. Nyhan went into considerable detail regarding the activities of the National Metal Trades Association, calling particular attention to its training program and the safety engineering department. He said the Norton Co., Worcester, Mass., has 40 apprentices, the replacement value of them being estimated at \$12,000.

Roger K. Buxton, personnel manager Boston works, Walworth Co., acted as toastmaster at the dinner. Among those he called upon was Charles L. Newcomb, Dean Pump Works, Worthington Pump & Machinery Co., Holyoke, Mass. Mr. Newcomb is one of the founders of the National Founders Association, as well as the National Metal Trades Association, and was

responsible for the "Metal" being inserted in the name of the latter organization. His remarks in connection with the early days of the organizations were highly entertaining. He pointed out that 1926 should be a memorable year in the metal trades for it marks the 100th anniversary of the malleable iron industry, founded by Seth Boyden in Newark, N. J., in 1826.

J. R. Kinney, Kinney Mfg. Co., Jamaica Plain, Boston, was elected president of the Boston branch for the ensuing year, and H. K. Spencer, Blanchard Machine Co., Cambridge, Mass., vice-president. Fred P. Kinney, Kinney Mfg. Co., was re-elected treasurer. Wolcott Remington, Thomson Electric Welding Co., Lynn, Mass., the retiring president, automatically becomes an honorary member. J. W. Hobbs Norton Jack Co. branch, Borg & Beck, Chicago, was made a member of the executive committee in the place of Mr. Spencer.

Export Organizations to Meet

The annual convention of export executives, conducted by the Export Managers Club of New York, will be held at the Hotel Pennsylvania, New York, March 16. Among the speakers announced for the morning and afternoon sessions of the convention are: Morton Hague, export manager Cellucotton Products Co.; Allan B. Cook, vice-president Guardian Trust Co., Cleveland; and E. B. Filsinger, export manager Lawrence & Co. Chairman of the sessions will be W. R. Cummings, vice-president Monroe Calculating Machine Co., and D. W. Fernhout, general manager International Manning Abrasive Co. Mr. Cummings is vice-president of the Export Managers Club.

The banquet in the evening is held with the cooperation of the American Exporters and Importers Association, American Manufacturers Export Association, Foreign Commerce Club, Foreign Trade Forum of the National Association of Credit Men, Merchants Association of New York, National Association of Manufacturers and the National Foreign Trade Council. Speakers announced for the dinner are Secretary of Commerce Herbert Hoover and B. C. Forbes.

Scrap Dealers to Hold Annual Meeting

The thirteenth annual convention and banquet of the National Association of Waste Material Dealers, New York, will be held March 16, at the Hotel Astor. Officers for the ensuing year will be elected and the various divisions of the association will hold separate sessions. The scrap iron division which meets in the morning will discuss, among other subjects, the uniform contract recently under consideration by the National Association of Purchasing Agents and the Department of Commerce at a meeting in Washington. The metal division is expected to take up the question of a revision of the present classification of non-ferrous metals. At the dinner in the evening, the principal speaker will be Senator C. C. Dill of Washington and Dr. John L. Davis, humorist.

Heat Treating Automobile Parts Shown by Film

An address on the heat treatment of automobile parts, illustrated by motion pictures, was given by J. M. Watson, metallurgical engineer Hupp Motor Car Corporation, Detroit, at the March meeting of the Boston chapter of the American Society For Steel Treating, held March 5, at the Massachusetts Institute of Technology.

The film deals with automatic furnace control and operation, automatic quenching and tempering, and tests for physical properties, as well as the importance of careful inspection. It starts with illustrations of specimens of steel carburized, among them axle I-beams and steering knuckles, these being the parts of an automobile upon which fall the most severe strains. Ovens for heat treating of these parts were shown in detail, inside and out. At the time the film was made,

oven temperatures were controlled by a workman. Today this work is automatically done.

In connection with quenching, Mr. Watson said the company aims to maintain a quenching oil temperature of 90 to 110 deg. Fahr. When quenching oils become obsolete as such, they are used as fuel for furnaces. At first, in the heat treatment of gears hard scale formed. Variation in furnace temperatures failed to eliminate the trouble. Finally, the gears, before heat treatment, were washed in a lye bath and reworked in boiling water to remove cutting oil used in the machining department. No more scale trouble was experienced.

Dealing with costs, Mr. Watson said that savings in operations and materials from the use of automatic equipment have more than paid the cost of installation and maintenance. Before the present system of heat treatment was used in the Detroit plant, the company paid 44c. per front axle I-beam treated. Today this work costs 0.138c., and a better product is obtained.

Discuss Wire and Sheet Metal Gages

A general conference to determine whether standardization of wire and sheet metal gages shall be undertaken has been called by the American Engineering Standards Committee for March 18, 10 a. m., at the Engineering Societies Building, 29 West Thirty-ninth Street, New York. Representatives from more than 150 organizations have been invited to attend.

Among the questions to be discussed is: Should the sectional committee be requested to make a recommendation for a systematic scheme of tolerances? A résumé of present American practice will be given by Col. E. C. Peck, works manager of the Cleveland Twist Drill Co., Cleveland, and a résumé of European practice by John Gaillard, engineer, American Engineering Standards Committee.

Dines Employees Long in Saw Business

E. C. Atkins & Co., makers of steel saws, Indianapolis, held a banquet of the Atkins Pioneers, Feb. 20, at the Hotel Severin, Indianapolis. The pioneers are those who have been with the company more than 20 years. The total membership is 223. Of this number, 19 have been with the company for more than 40 years. Two members have been with the company more than a half century, these being Charles F. Aumann, who has served since 1870, and Charles Fenton, since 1873. The club was organized in 1906 with 62 members, of whom 45 still are active.

Rewards for Outstanding Service

Thirty employees of the General Electric Co., scattered through factories and offices all over the United States, have been given awards in recognition of outstanding performances in 1925. The awards include Charles A. Coffin Foundation Certificates of Merit and honorariums of \$300. More than half of the awards went to members of the factory group.

These men, only a handful out of more than 50,000 engaged in the company's manufacturing organization, made worthwhile suggestions that revolutionized the processes on which they were engaged—suggestions that could not be expected from them as part of the work in which they were engaged. They invented new machines, developed new manufacturing processes, reduced production costs, increased output and bettered working conditions. It was recognition of these services, in addition to their regular work, which entitled the men to the awards.

American shipyards on March 1 were building or were under contract to build for private shipowners 233 steel vessels of 253,385 gross tons compared with 186 steel vessels of 219,793 gross tons on Jan. 1, according to the Bureau of Navigation, Department of Commerce.

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The corporation's history was cut into almost equal parts by the beginning of the World War, a fact which the rapid passage of time lately makes it a trifle difficult to realize. Starting in actual operation April 1, 1901, the Steel Corporation was 12½ years old on Oct. 1, 1913, ten months before the war broke out. The steel ingot capacity of the country, in terms of rates per annum that could probably be attained, though possibly not maintained for a full twelvemonth, was approximately 15,000,000 tons on April 1, 1901, and 35,000,000 tons at the end of 1913, while lately it has been set for the present time at 56,000,000 tons. The successive increases were 133 per cent and 60 per cent. The geometrical ratio failed completely, but the tonnage increases in the two periods run together—20,000,000 tons and 21,000,000 tons.

The Steel Corporation brought together several combinations of the horizontally-integrated type, plus the Federal Steel Co. and Carnegie Steel Co., which were of the vertical type. There were two conceptions at the time. One was that the future of steel demand was very promising and that a large, well managed and financially responsible institution was needed to supply the public with the steel it was preparing to require, and reap reasonable as well as tempting fruits from the service rendered.

The other conception was illustrated by lurid pictures drawn of an impending "battle of the giants" in which there would be over-development, crashes and great loss of capital. One "combine" would seek to enter the field of another and the Carnegie Steel Co. would go after the whole crowd.

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When the Steel Corporation acquired the various companies it did not find them all in sound condition or well alined for expansion. One of the first acts of the management was to write off \$116,356,111 from the property account, as shown in the balance sheet of Dec. 31, 1902, this being the "surplus" subsidiary companies had shown at the date of their acquisition on April 1, 1901. And one of the objects of the preferred stock and bond conversion of that period was to provide the modest sum of \$20,000,000 cash as addition to working capital. The chances of the individual units being able to finance large expenditures may be conjectured.

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The motivation of it all? Simply that the late Senator LaFollette wanted to prove that the railroads of the country were worth only about 12 billion dollars, so that their rates and incomes

might be legislatively reduced. A technological freshman might have inquired if so many miles of rails at so much per mile and so many locomotives and cars at so much per unit would not have given a different and reasonable idea. To be sure. But to demagogic minds such thoughts do not occur.

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Building construction stands the test of this particular theory fairly well. Speculative building

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more than two-thirds the cost of government in America is incurred by the States and municipalities and is defrayed mainly by taxes upon real estate, which ought not to be increased. Thus in the State of New York, where there is a great urban population and likewise a great rural, the farmers constantly complain of their burden and resist income tax reduction for the sake of the town dwellers, forgetful that the latter are the larger owners of real estate and are taxed upon it accordingly.

In this country as a whole the value of the farms is less than that of the urban real estate. If all the physical property in the United States be valued at 300 billion dollars and if the cost of government to be 10 billion a tax against property alone would have to be about 3 1/3 per cent. The rate on property that is taxed directly does not average so high as that. Farmers, therefore, have little or nothing to complain of in respect to taxation. As a class they pay no Federal income tax and what they pay in property tax inures to their immediate community benefit in the form of schools, roads, etc.

The great mass of the people pay taxes directly through their ownership of homes and indirectly through their ownership of shares in corporations. The relatively few who own more of real estate, shares and other property have never objected to being taxed in proportion thereto, nor to being taxed in proportion to their earnings and income. But the theory of surtaxing them is founded upon the idea of penalizing the successful for the benefit of the poorer. Even though the well-to-do can stand this, the system is demoralizing to the people as

a whole. It leads to profligacy in public expenditure, to the aggrandizement of politicians, and to bad government.

THAT pig iron is a steadily lessening factor in steel making has been pointed out repeatedly; but 1925 showed a wider gap than any other year between the country's output of pig iron and that of steel. Against roundly 36 3/4 million tons of pig iron, the estimated production of steel ingots and castings last year was 45 1/4 million tons. The difference of 8,500,000 tons is greater than in any previous year, the spread in 1913 being only 400,000 tons. As is well known, scrap as a substitute for pig iron is being used in annually increasing proportions. Steel cannot be made by the Bessemer process without pig iron, but the Bessemer steel percentage has long been on the decline. In the open-hearth process at least 50 per cent pig iron was once considered necessary; today this proportion has been much reduced. In the electric process pig iron has never been a necessity. Fundamentally the introduction of excess carbon into iron and its later elimination should not be necessary. The question may soon be raised whether the elimination of pig iron is one stage in the progress toward the large-scale employment of a direct process in the production of steel.

FEBRUARY may be a short month, but the steel ingot production for last month and the four months preceding was 19,724,973 tons, replacing the previous five-months record of 19,545,485 tons, made in March-July, 1923.

Pay Tribute to Roll Designer

Notable Testimonial Dinner Given to James E. Jones at Pittsburgh

If James E. Jones, superintendent roll department South works, Illinois Steel Co., had any doubts as to esteem, affection and loyalty of his friends they must



JAMES E. JONES

have been dispelled on Saturday evening, March 6, when he was given a testimonial dinner at the Pittsburgh Athletic Association, Pittsburgh, and not only heard his praises sung but was presented with a beautiful bronze statue as a souvenir of the occasion. Roll shop superintendents, roll designers, roll makers and plant superintendents were there; they came from Sault Ste. Marie; from Chicago; from Buffalo; from Philadelphia; from Wheeling; from Johnstown; from Steelton; from Bethlehem; of course from Pittsburgh, and it seemed from every point where steel is made and rolled. They came to

do honor to a man who is generally accepted as the dean of roll designers, to express gratitude in person to a man who gave the advice or assistance that helped many to high places in the steel industry and to give

voice to the appreciation of what Mr. Jones has done in roll design and development.

Every one of the gathering, which numbered more than 50, either had shared the friendship of Mr. Jones, or had felt the influence of that friendship through those who have enjoyed it. It was a spontaneous expression of good will for a man of such great modesty that the problem of the committee in charge of the affair was to keep from Mr. Jones the knowledge that he was to be the guest of honor in the fear that he would not come if he knew it.

H. L. James, general manager Pencoyd works, American Bridge Co., was chairman of the committee of arrangements, which included William Jewel, Inland Steel Co., Chicago, W. C. Oberg, Carnegie Steel Co., Homestead, Pa., D. L. Eynon, Bethlehem Steel Co., Bethlehem, Pa., and Arthur F. Nelson, Bethlehem Steel Co., Steelton, Pa. Mr. James was toastmaster and before presenting the bronze statue to Mr. Jones, referred to him as the greatest of roll designers, that he was a man whose life's monument was in the men he had helped.

Other speakers were P. A. Newton, general manager South works, Illinois Steel Co.; Arthur F. Nelson, superintendent roll shop Bethlehem Steel Co., Steelton, Pa.; H. E. Field, president Wheeling Mold & Foundry Co., Wheeling, W. Va.; William Jewel, Harry G. O'Brien, Trumbull Steel Co., Warren, Ohio; Albert Pack, Hubbard Steel Foundry Co., Chicago; Charles Phipps, Bethlehem Steel Co., Lackawanna, N. Y.; Norman Rendleman, Jones & Laughlin Steel Corporation, Pittsburgh; Alfred Crook, Philadelphia Roll & Machine Co., Philadelphia; Harry F. Wahr, president Mesta Machine Co., Pittsburgh; John Singer, Algoma Steel Co., Sault Ste. Marie, Canada; Don Bakewell, Duquesne Steel Foundry Co., Pittsburgh; E. D. Leonard, Hubbard

Steel Foundry Co., and D. L. Eynon, president Pittsburgh Rolls Corporation, Pittsburgh.

Others present were: A. H. Beale, president A. M. Byers Co., Pittsburgh; W. C. Oberg, Carnegie Steel Co., Homestead; D. L. Eynon, Bethlehem Steel Co., Bethlehem; G. W. Russell, International Nickel Co., Huntington, W. Va.; J. E. McCauley, Birdsboro Foundry & Machine Co., Birdsboro, Pa.; John Keener, Carnegie Steel Co., Braddock, Pa.; Q. S. Snyder, Pittsburgh Rolls Corporation; Thomas N. Jewel, Wisconsin Steel Co., South Chicago; H. A. Lomax, Mackintosh-Hemphill Co., Pittsburgh; W. R. Stuetz, Central Steel Co., Massillon, Ohio; E. Kent Lewis, Duquesne Steel Foundry Co.; Grant Moses, National Tube Co., Lorain, Ohio; Ward Reebel, Mesta Machine Co., Pittsburgh; Samuel McMillin, Mackintosh-Hemphill Co.; Fred Daniels, Bethlehem Steel Co.; Fred Griffiths, Mackintosh-Hemphill Co.; H. C. Howell, Wheeling Mold & Foundry Co.; Edward Jones, Birdsboro Foundry & Machine Co.; William H. Seaman, Hubbard Steel Foundry Co.; John Rose, Eastern Steel Co., Philadelphia; Lorenz Iverson, Mesta Machine Co.; W. J. Ballantyne, Jones & Laughlin Steel Corporation; Samuel W. Mitchell, Philadelphia Rolls & Machine Co., Philadelphia; G. H. Aykroyd, Bethlehem Steel Co., Bethlehem; William Nichols, Philadelphia Rolls & Machine Co.; James Ormond, Carnegie Steel Co., Clairton; J. T. Osler, Hubbard Steel Foundry Co.; J. J. Brown, Carnegie Steel Co., Pittsburgh; John Agnew, Wheeling

Mold & Foundry Co.; E. G. Crozier, Carnegie Steel Co., Homestead; James Cranston, Bethlehem Steel Co., Johnstown, Pa.; A. J. Ramsay, Pittsburgh Rolls Corporation; William H. Thomas, National Tube Co., Lorain; Frank Cordes, Wheeling Mold & Foundry Co.; A. D. Neal, Duquesne Steel Foundry Co.; William Gardner, United Engineering & Foundry Co., Pittsburgh; T. W. Campbell, Inland Steel Co.; W. H. Melaney, National Roll & Foundry Co., Avonmore, Pa.; R. H. Stevens, Bethlehem Steel Co., Johnstown; John W. Lees, Inland Steel Co.

Mr. Jones, who since 1905 has been superintendent roll department South works, Illinois Steel Co., was born in Wales. Coming to this country when a boy he received his formal education in Philadelphia and Troy, N. Y. He started out as a roll turner with Achill Thomas in Pittsburgh. From that position he went with the Pencoyd Iron Works before it was part of the American Bridge Co. Then he went to Pueblo, Colo., to work for the Colorado Fuel & Iron Co., with which he was associated for six years. His next connection was with the Passaic Steel Co., which he left to go with the Dominion Iron & Steel Co., at Sydney, N. S. He later returned to Pittsburgh as superintendent for Seaman, Sleeth & Co., now the Pittsburgh Rolls Corporation. It was from this place that he went to the position he now holds.

February Steel Ingot Production

Daily Rate 1621 Tons or 1 Per Cent Less Than January — Exceeds Both January and February of Last Year

A MODERATE decrease in the production of steel ingots in the United States took place in February as compared with January. At 158,131 gross tons per day the February output was 1621 tons less than that of January, a decrease of a little over 1 per cent. In January there was an increase in the daily rate over December of about 4.5 per cent. The daily production so far this year is 3000 tons more than for the same months a year ago.

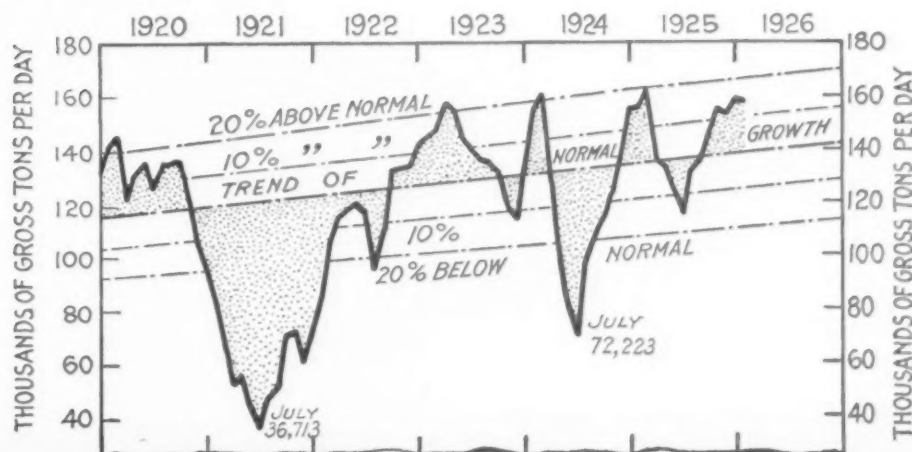
In February the total production was 38,896 tons larger than the February output of 1925. In daily rate the February record this year is 1621 tons in excess of that of February a year ago.

The statistics of the American Iron and Steel Institute show that the February production of the companies which made 94.43 per cent of the country's total in 1924 was 3,583,750 tons. Assuming that the 5.57 per cent not reporting produced at the same rate a total February output is indicated by 3,795,139 tons.

The table gives the production by months of the different kinds of steel, together with the estimated daily rate for all companies.

Monthly Production of Steel Ingots, Reported by Companies Which Made 94.43 Per Cent of the Steel Ingot Production in 1924
(Gross Tons)

Months 1926	Reported Tonnage			Calculated Monthly Production All Companies	Approximate Daily Production All Companies
	Open-hearth	Bessemer	All Other		
Jan.	3,326,846	581,683	13,664	4,153,545	159,752*
Feb.	3,014,901	556,031	12,818	3,795,139	158,131
2 mos.	6,341,747	1,137,714	26,482	7,948,684	158,974
*Revised.					
1925					
Jan.	3,262,748	689,996	11,960	4,198,564	155,502
Feb.	2,931,964	602,042	13,014	3,756,243	156,510
2 mos.	6,194,712	1,292,038	24,974	7,954,807	155,977
March	3,336,169	614,860	13,633	4,198,520	161,482
April	2,857,802	515,715	14,182	3,587,524	137,982
May	2,754,130	497,708	13,790	3,458,253	133,010
June	2,538,988	476,945	12,490	3,207,056	123,348
July	2,444,969	457,095	13,547	3,087,590	118,753
Aug.	2,696,667	523,734	12,914	3,424,074	131,694
Sept.	2,737,251	547,121	13,977	3,492,904	134,342
Oct.	3,075,995	584,567	15,624	3,893,028	144,186
Nov.	3,091,361	581,347	17,085	3,907,437	156,297
Dec.	3,169,224	569,304	15,843	3,975,824	152,916
Total	34,897,268	6,660,434	168,059	44,186,977	142,080



February Production of Steel Ingots Shows that the Daily Output Was About 15 Per Cent Above Normal, the Normal Representing Consumption by a Balancing of Excesses and Deficiencies of Production Over a Period of Years

Iron and Steel Markets

Output Still Exceeds New Orders

Steel Corporation Tonnage Falls 10,000 Tons a Day, but
Consumption Rate Is High—Best Week in Structural
Steel—Ferromanganese Flurry—No Advance in Ore

OUTPUT by steel consuming industries shows no decline and leading steel companies are operating at the high rate of recent weeks. However, new business coming to the rolling mills is not sufficient to replace current shipments, the Chicago district being alone in showing an increase in tonnage on the books.

The Steel Corporation, which for several weeks has averaged above 90 per cent in ingot production, has been shipping about 10,000 tons a day more of finished steel than it has booked. In the past week it has operated at nearly 95 per cent of capacity. Independent companies appear to be averaging close to 85 per cent.

With no signs thus far of the overproduction that marked the first quarter of 1925, the country's ingot output in January and February was 7,948,000 tons, or only 6000 tons less than in the first two months of 1925. Today railroad, building, automobile, and oil and gas pipe consumption is on a scale indicating good mill schedules for the heavier products in the next 60 days.

Of much moment to sheet producers is the fact that the automotive industry is now ordering body sheets more freely than in any preceding week of the year.

The effort of producers to get higher prices on plates, shapes and bars for second quarter shipment continues to work against the building of backlogs. Some mills are naming 2c., Pittsburgh, on bars and 1.85c. on shapes only on sales for prompt or March delivery.

On large tonnages of steel for railroad cars the concession is now more commonly \$2 a ton from the general market price; heretofore it has run up to \$4 a ton.

With 20,000 tons for the Cleveland Union Terminal, 9500 tons for a San Francisco office building and 10,000 tons of miscellaneous work in New York, the total of structural steel awards was upward of 63,000 tons, by far the largest week of the year.

Freight cars ordered in the week totaled 4150, of which the Southern took 2250 and the Southern Pacific 1100. The Southern also ordered 113 locomotives. The Pennsylvania Railroad is inquiring for 100 to 200 locomotives and 2000 steel automobile cars.

Foreign steel bars are giving domestic mills harder competition at Atlantic seaboard points, sales having been as low as 1.70c., duty paid. About 1200 tons came in at Philadelphia last week.

The Conowingo power project on the Susquehanna River near the Pennsylvania-Maryland border will require 5000 tons of concrete reinforcing bars and a like tonnage of structural steel for 500 towers.

German, Belgian and French bars, hoops, shapes and wire are being unloaded in increasing quantities

at North Atlantic and Gulf ports. Continental mills are competing so sharply against each other that profits are disappearing.

Another Japanese rail order placed in the United States calls for 5500 tons of 100-lb. sections for the Imperial Government Railways. For Osaka, 3500 tons of 91-lb. rails went to Europe.

That the price of Lake Superior iron ore had been advanced 25c. for the season of 1926 was an unfounded report of the week. Sales may not come before early April, and in the present state of the pig iron market an ore advance is unlikely.

The ferromanganese trade is stirred by the cut just made in the price from \$115 to \$100, Atlantic port. Leading users bought most of their 1926 metal from a domestic steel company in December, and thus imports of British "ferro" will be the smallest in years. Early developments are expected to determine the holding power of the \$100 price.

February imports of pig iron at Boston were more than twice those of January, and Germany maintained first place in shipments. However, at 10,659 tons, they compare with 13,701 tons in February, 1925. Foreign iron has sold as low as \$19.50 at Atlantic port.

Weakness in Philadelphia foundry iron caused THE IRON AGE pig iron composite price to drop to \$21.38, from \$21.46 last week. This is its lowest level since November.

The composite price for finished steel remains at 2.431c. This is above the low figure of February, but below the January price.

Pittsburgh

Short Term Buying Sustains 80 Per Cent Steel Output—Scrap Trend Upward

PITTSBURGH, March 9.—Steel consuming industries all appear to be working well and, not being heavily stocked with steel, are constantly in the market. The only cause for dissatisfaction among steel makers is the fact that buying is on a very short term basis. Purchases are being restricted to actual requirements, and the accumulation of backlog tonnages by the mills is out of the question at the moment. There is enough business to sustain the recent rate of ingot production in this and nearby districts at about 80 per cent of capacity, but the manufacturers are finding it necessary to schedule the mills much more frequently than over the end of last year and during January and February of this year. If there is one outstanding feature in the market, it is that the automotive industry is ordering body sheets more freely now than at any time since the first of the year.

The week has brought no important price changes.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At Date, One Week, One Month, and One Year Previous
For Early Delivery

Pig Iron, Per Gross Ton:	Mar. 9, 1926	Mar. 2, 1926	Feb. 9, 1926	Mar. 10, 1925
No. 2X, Philadelphia	\$23.26	\$23.76	\$24.26	\$24.26
No. 2, Valley Furnace	20.50	20.50	20.50	21.00
No. 2, Southern, Cin'ti	25.69	25.69	25.69	24.05
No. 2, Birmingham, Ala.	22.00	22.00	22.00	20.00
No. 2 foundry, Chicago	23.00	23.00	23.00	24.00
Basic, del'd, eastern Pa.	22.25	22.50	23.00	23.75
Basic, Valley furnace	20.00	20.00	20.00	21.50
Valley Bessemer del. P'gh.	22.76	22.76	22.76	24.26
Malleable, Chicago	23.00	23.00	23.00	24.00
Malleable, Valley	20.50	20.50	20.50	21.50
Gray forge, Pittsburgh	21.76	21.76	21.76	22.26
L. S. charcoal, Chicago	29.04	29.04	29.04	29.04
Ferromanganese, furnace	100.00	115.00	115.00	115.00

Rails, Billets, etc., Per Gross Ton:	Mar. 9, 1926	Mar. 2, 1926	Feb. 9, 1926	Mar. 10, 1925
O.-h. rails, heavy, at mill	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill	35.00	35.00	36.00	40.32
Bess. billets, Pittsburgh	35.00	35.00	35.00	37.00
O.-h. billets, Pittsburgh	35.00	35.00	35.00	38.00
O.-h. sheet bars, P'gh.	36.00	36.00	36.00	38.00
Forging billets, base, P'gh.	40.00	40.00	40.00	42.50
O.-h. billets, Phila.	40.30	40.30	41.30	41.67
Wire rods, Pittsburgh	45.00	45.00	45.00	48.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	1.90	1.90	1.90	2.10

Finished Iron and Steel, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.22	2.22	2.22	2.28
Iron bars, Chicago	2.00	2.00	2.00	2.10
Steel bars, Pittsburgh	2.00	2.00	2.00	2.10
Steel bars, Chicago	2.10	2.10	2.10	2.20
Steel bars, New York	2.34	2.34	2.34	2.44
Tank plates, Pittsburgh	1.85	1.85	1.80	2.00
Tank plates, Chicago	2.10	2.10	2.10	2.30
Tank plates, New York	2.14	2.14	2.09	2.34
Beams, Pittsburgh	1.90	1.90	1.90	2.10
Beams, Chicago	2.10	2.10	2.10	2.30
Beams, New York	2.24	2.24	2.24	2.44
Steel hoops, Pittsburgh	2.50	2.50	2.50	2.40

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Sheets, Nails and Wire, Per Lb. to Large Buyers:	Mar. 9, 1926	Mar. 2, 1926	Feb. 9, 1926	Mar. 10, 1925
Sheets, black, No. 28, P'gh.	3.25	3.25	3.25	3.50
Sheets, black, No. 28, Chicago dist. mill	3.45	3.45	3.45	3.70
Sheets, galv., No. 28, P'gh.	4.50	4.50	4.50	4.65
Sheets, galv., No. 28, Chicago dist. mill	4.70	4.70	4.70	4.85
Sheets, blue, 9 & 10, P'gh.	2.50	2.50	2.50	2.70
Sheets, blue, 9 & 10, Chicago dist. mill	2.60	2.60	2.60	2.80
Wire nails, Pittsburgh	2.65	2.65	2.65	2.85
Wire nails, Chicago dist. mill	2.70	2.70	2.70	2.95
Plain wire, Pittsburgh	2.50	2.50	2.50	2.60
Plain wire, Chicago dist. mill	2.55	2.55	2.55	2.70
Barbed wire, galv., P'gh.	3.35	3.35	3.35	3.55
Barbed wire, galv., Chicago dist. mill	3.40	3.40	3.40	3.65
Tin plate, 100 lb. box, P'gh	\$5.50	\$5.50	\$5.50	\$5.50

Old Material, Per Gross Ton:	Mar. 9, 1926	Mar. 2, 1926	Feb. 9, 1926	Mar. 10, 1925
Carwheels, Chicago	\$17.00	\$17.00	\$17.00	\$17.50
Carwheels, Philadelphia	17.50	17.50	17.50	18.50
Heavy steel scrap, P'gh.	18.00	17.75	17.50	18.50
Heavy steel scrap, Phila.	15.50	15.50	16.00	16.00
Heavy steel scrap, Ch'go.	14.00	13.75	13.75	17.00
No. 1 cast, Pittsburgh	17.00	17.00	17.00	19.00
No. 1 cast, Philadelphia	17.50	17.50	18.00	18.00
No. 1 cast, Ch'go (net ton)	17.00	17.00	17.00	18.50
No. 1 RR. wrot. Phila.	17.00	17.50	18.00	19.00
No. 1 RR. wrot. Ch'go (net)	13.00	12.75	12.75	15.00

Coke, Connellsville, Per Net Ton at Oven:	Mar. 9, 1926	Mar. 2, 1926	Feb. 9, 1926	Mar. 10, 1925
Furnace coke, prompt	\$3.25	\$3.00	\$10.50	\$3.50
Foundry coke, prompt	4.50	4.50	11.50	4.25

Metals, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	14.37 1/2	14.37 1/2	14.50	14.62 1/2
Electrolytic copper, refinery	13.95	13.87 1/2	14.00	14.25
Zinc, St. Louis	7.40	7.35	8.07 1/2	7.35
Zinc, New York	7.75	7.70	8.42 1/2	7.70
Lead, St. Louis	8.90	8.60	9.12 1/2	8.75
Lead, New York	8.60	8.90	9.25	9.00
Tin (Strait), New York	64.00	64.00	63.50	53.37 1/2
Antimony (Asiatic), N. Y.	19.50	20.50	21.50	16.00

THE IRON AGE Composite Prices

Finished Steel

March 9, 1926, 2.431c. Per Lb.

One week ago	2.431c.
One month ago	2.439c.
One year ago	2.546c.
10-year pre-war average	1.689c.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

	High		Low	
1926	2.453c.	Jan. 5:	2.424c.	Feb. 9
1925	2.560c.	Jan. 6:	2.396c.	Aug. 18
1924	2.789c.	Jan. 15:	2.460c.	Oct. 14
1923	2.824c.	April 24:	2.446c.	Jan. 2

Pig Iron

March 9, 1926, \$21.38 Per Gross Ton

One week ago	\$21.46
One month ago	21.54
One year ago	22.13
10-year pre-war average	15.72

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

	High		Low	
1926	\$21.54,	Jan. 5:	\$21.38,	March 9
1925	22.50,	Jan. 13:	18.96,	July 7
1924	22.88,	Feb. 26:	19.21,	Nov. 3
1923	30.86,	March 20:	20.77,	Nov. 20

Makers of cold-finished steel bars have opened their books for second quarter tonnages at unchanged prices, except that they have imposed an extra of 10c. per 100 lb. on shipments of less than 24,000 lb. The makers of plates, shapes and bars are not satisfied with present prices, and an effort to obtain higher figures on second quarter tonnages is still in progress. Some mills are limiting sales on bars at 2c., base Pittsburgh, and on plates at 1.85c., base Pittsburgh, to prompt delivery or shipment over the remainder of the month. Present prices of semi-finished steel appear to be all that makers can expect on second quarter contracts. Specifications on first quarter contracts lately have been very light, and it is quite evident that buyers exceeded their requirements in the orders they placed for delivery in this quarter.

Pig iron trading is at a standstill. There is not enough interest in the market on the part of consumers to encourage producers to find out what price would result in business. Users are fairly well covered against their immediate requirements and are disposed to wait to see if the changed coke situation will have any effect upon pig iron prices. The coke market this week appears to be somewhat stronger than it was a week ago, but negotiations for second quarter tonnages still are in abeyance as the blast furnace operators seem to think that they will lose nothing by waiting until the opening of the second quarter is nearer at hand.

The scrap market in this district has shown considerable variation, but if there is a definite tendency, it is toward higher levels.

Pig Iron.—The market here is merely marking time. The only sales are those to small lot users who rarely buy very far ahead of their actual requirements and are almost constantly in the market for a carload or two. The important consumers have enough iron on hand or under contract to carry them into the second quarter and are not interested in further supplies even to the extent of making a bid. Producers, on the other hand, are not forcing sales but, on the contrary, are making a very strong effort to maintain present prices. Present merchant production of iron does not appear to be in excess of what is regarded as an average consumption in this district. The Claire Furnace, Reliance Coke & Furnace Co., Sharpsville, Pa., which was banked early in the year, is still out of production and, while the original plan called for a resumption on April 1, it is possible that it may be deferred beyond that date. The stack of the Clinton Iron & Steel Co., Pittsburgh, is not yet producing and may remain banked until April 1, or later. Of the 22 furnaces in western Pennsylvania and the Valley districts making iron for the market, nine are in production and the output of two of these is going to requirement contract customers.

We quote Valley furnace the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic	\$20.00
Bessemer	21.00
Gray forge	20.00
No. 2 foundry	20.50
No. 3 foundry	20.00
Malleable	20.50
Low phosphorus, copper free.....	\$28.00 to 28.50

Ferroalloys.—The interesting event of the week is the break in ferromanganese, which now is being offered by one large domestic maker at \$100, furnace or Atlantic seaboard, for delivery over the remainder of the year, as against \$115, the recent quotation. This reduction was made last Friday following the announcement of agents of British makers the day before of a cut of \$5 a ton to \$110, seaboard. The drop finds its explanation in the fact that late in 1925 one domestic producer took considerable tonnage for shipment mostly in the first half of this year, but some for delivery throughout the year, at a price reported to have been as low as \$105, Atlantic seaboard. Other makers were disposed to take the small tonnages that remained and maintain the price, but not enough business could be done to give anything like an economical operation; hence, a price cut sharp enough to stimulate demand. Other ferroalloy prices are holding at recent levels, with business confined chiefly to specifications against contracts. High grade spiegeleisen is scarce. Prices are given on page 719.

Semi-Finished Steel.—A few second quarter contracts for billets and slabs have been written lately at the full quotations, but generally there is not the rush on the part of the non-integrated manufacturers to get under cover that there was for the quarter now drawing to a close. There are no fears of a shortage or of higher prices, as there were last November and December, and since most buyers covered on a basis of a continuance of finished steel business in the volume of the last two months of 1925, they will still have first quarter steel to draw on for their second quarter requirements. Current specifications in sheet bars, billets and slabs are very light. Large shipments were made on contracts in January and February, and some manufacturers with steel-making capacity have found that ample without ordering steel bought outside. The market is steady, rather than firm, at quotations. Wire rods are at \$45, base Pittsburgh or Cleveland, for either spot or second quarter tonnages. Open market trading in skelp is very light, with prices nominal. Prices are given on page 719.

Steel and Iron Bars.—Mills here and in Youngstown are seeking 2.10c. base Pittsburgh, on small lots of steel bars for second quarter, but the present market for spot or March shipment remains at 2c. There is no evidence that the mills are not meeting the demand for practically all sizes and are making very prompt deliveries, nor is there anything to sustain reports of full operations of the bar mills. Buying is at closer range than it was during the last two months of last year, and backlog business is being cut down. Iron

bars are moving steadily at recent prices. Prices are given on page 717.

Structural Steel.—Getting the market above 1.90c., base Pittsburgh, on large structural shapes is not proving easy. The mills are hopeful of advancing the price to 2c. for shipments after April 1, but at present 1.90c. represents maximum possibilities except on very small lots. General business in fabricated steel is good, but local shops could handle a good deal more tonnage than is developing in what they regard as their natural territory. A report that the general contract for the new Pittsburgh-Pennsylvania Hotel, requiring about 8000 tons of steel, has been let is denied by those back of the project. General contracts also are yet to be let for two combination theater and office buildings and for a new hotel to replace the General Forbes Hotel. There is prospective business for local fabricators, but it is extremely slow in moving toward the shops or mills. Plain material prices are given on page 717.

Plates.—The idea of makers in this and nearby districts is to obtain a minimum of 1.90c., base Pittsburgh, on plates for second quarter shipment, but at the moment 1.85c. is more representative of actual business. If, as is reported, Eastern mills are taking a stronger stand, it will be helpful in establishing higher prices here, as Eastern mill competition is charged with the weakness that developed during this quarter. There are 40 barges, requiring 7500 tons of steel, in an inquiry of the Upper Mississippi Barge Line, on which bids will be asked in the next week or so and award of which is expected around April 1. Prices are given on page 717.

Wire Products.—Orders are expanding, but not so rapidly as manufacturers wish, nor are they taxing productive capacity. Mill operations hold at 65 to 70 per cent of capacity, and that rate of production appears ample to supply present demand. Prices are very steady, and second quarter contracts from manufacturing consumers are being written at the full market quotations. There does not seem to have been any overbuying by those who purchase by the quarter, and most manufacturers will be well cleared of first quarter obligations at the end of the period. Prices are given on page 717.

Rails and Track Supplies.—New business is light, but manufacturers are well supplied with business and report satisfactory specifications against contracts. Prices show no change, but the market still favors buyers on light rails, as there is active competition for a comparatively small amount of business. Prices are given on page 717.

Tubular Goods.—Little complaint is heard from pipe makers as to business. Demands from jobbers, in both standard and oil country pipe, are growing steadily, and even greater activity is looked for as the spring draws near. The mills are meeting a good many demands from stocks, and this tends to prevent a reflection of the larger demands in mill operations. There is a fairly good demand for boiler tubes, but not nearly enough to engage productive capacity. Prices are no more than steady even at present low levels. Discounts are given on page 717.

Sheets.—Sheet business is looking up, and as it is finally beginning to include a fair amount of automobile body stock, producers are taking a more cheerful view of the situation. Other sheet consuming industries have been taking sheets in a way that indicated a good average engagement of capacity, and in the case of electrical sheets, specifications have been above the average. No real reason has existed this year for dissatisfaction with the shipments to the agricultural implement manufacturers and to the makers of metal furniture, metal lath, barrels and drums, kitchen utensils and stoves and ranges. The lack of usual business has been from the automobile builders, and that represents a big tonnage, since that industry is credited with annually taking from 30 to 35 per cent of the entire sheet output of the country. Prices generally are steady. Concessions from what makers regard as the regular prices continue, but they are more frequent in black than in galvanized or blue annealed sheets. On a production basis, the mills are operating between 75 and 80 per cent of capacity. Prices are given on page 717.

Prices of Finished Iron and Steel Products (Carload Lots)

Iron and Steel Bars

Soft Steel

	Base Per Lb.
F.o.b. Pittsburgh mills.....	2.00c.
F.o.b. Chicago.....	2.10c.
Del'd Philadelphia.....	2.32c.
Del'd New York.....	2.34c. to 2.44c.
Del'd Cleveland.....	2.19c.
F.o.b. Birmingham.....	2.15c. to 2.25c.
C.I.F. Pacific ports.....	2.35c.
F.o.b. San Francisco mills.....	2.35c. to 2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills.....	1.90c. to 2.00c.
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Rail Steel

F.o.b. mill.....	1.80c. to 1.90c.
F.o.b. Chicago.....	2.00c.

Iron

Common iron, f.o.b. Chicago.....	2.00c.
Refined iron, f.o.b. P'gh mills.....	3.00c.
Common iron, del'd Phila'phia.....	2.22c.
Common iron, del'd New York.....	2.24c.

Tank Plates

	Base Per Lb.
F.o.b. Pittsburgh mill.....	1.85c. to 1.90c.
F.o.b. Chicago.....	2.10c.
F.o.b. Birmingham.....	1.95c. to 2.05c.
Del'd Cleveland.....	2.04c. to 2.09c.
Del'd Philadelphia.....	2.09c. to 2.12c.
Del'd New York.....	2.14c.
C.I.F. Pacific ports.....	2.30c.

Structural Shapes

	Base Per Lb.
F.o.b. Pittsburgh mill.....	1.90c. to 2.00c.
F.o.b. Chicago.....	2.10c.
F.o.b. Birmingham.....	2.05c. to 2.15c.
Del'd Cleveland.....	2.09c. to 2.19c.
Del'd Philadelphia.....	2.12c. to 2.22c.
Del'd New York.....	2.24c. to 2.34c.
C.I.F. Pacific ports.....	2.35c.

Hot-Rolled Flats (Hoops, Bands and Strips)

	Base Per Lb.
All gages, narrower than 6 in., P'gh.....	2.50c.
All gages, 6 in. and wider, P'gh.....	2.30c.
All gages, 6 in. and narrower, Chicago.....	2.60c.
All gages, wider than 6 in., Chicago.....	2.50c.

Cold-Finished Steel

	Base Per Lb.
Bars, f.o.b. Pittsburgh mills.....	2.50c.
Bars, f.o.b. Chicago.....	2.50c.
Bars, Cleveland.....	2.55c.
Shafting, ground, f.o.b. mill.....	*2.70c. to 3.00c.
Strips, f.o.b. Pittsburgh mills.....	3.90c.
Strips, f.o.b. Cleveland mills.....	3.90c.
Strips, delivered Chicago.....	4.20c.
Strips, f.o.b. Worcester mills.....	4.05c.

*According to size.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

	Base Per Keg
Wire nails.....	\$2.65
Galv'd nails, 1-in. and longer.....	4.65
Galv'd nails, shorter than 1 in.....	4.90
Galvanized staples.....	3.35
Polished staples.....	3.10
Cement coated nails.....	2.65

Base Per 100 Lb.

Bright plain wire, No. 9 gage.....	\$2.50
Annealed fence wire.....	2.65
Spring wire.....	3.50
Galv'd wire, No. 9.....	3.10
Barbed wire, galv'd.....	3.35
Barbed wire, painted.....	3.10

Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass., mill \$3 a ton higher on production of that plant; Duluth, Minn., mill \$2 a ton higher; Anderson, Ind., \$1 higher.

Woven Wire Fence

Base to Retailers Per Net Ton

F.o.b. Pittsburgh.....	\$65.00
F.o.b. Cleveland.....	65.00
F.o.b. Anderson, Ind.....	66.00
F.o.b. Chicago district mills.....	67.00
F.o.b. Duluth.....	68.00
F.o.b. Birmingham.....	68.00

Sheets

Blue Annealed

	Base Per Lb.
Nos. 9 and 10, f.o.b. Pittsburgh.....	2.45c. to 2.50c.
Nos. 9 and 10, f.o.b. Ch'go dist. mills.....	2.60c.
Nos. 9 and 10, del'd Phila'phia.....	2.82c.

Box Annealed, One Pass Cold Rolled

No. 28, f.o.b. Pittsburgh.....	3.25c. to 3.35c.
No. 28, f.o.b. Ch'go dist. mill.....	3.45c.
No. 28, del'd Phila'phia.....	3.67c.

Galvanized

No. 28, f.o.b. Pittsburgh.....	4.50c. to 4.60c.
No. 28, f.o.b. Chicago dist. mill.....	4.70c.
No. 28, del'd Philadelphia.....	4.92c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh.....	3.25c. to 3.35c.
No. 28, f.o.b. Chicago dist. mill.....	3.45c.

Automobile Body Sheets

No. 22, f.o.b. Pittsburgh.....	4.40c.
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Long Ternes

No. 28, 8-lb. coating, f.o.b. mill.....	4.85c.
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Tin Plate

	Per Base Box
Standard cokes, f.o.b. P'gh district mills.....	\$5.50
Standard cokes, f.o.b. Gary and Elwood, Ind.....	5.60

Terne Plate

(F.o.b. Morgantown or Pittsburgh)

(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base.....	\$11.40
8-lb. coating I.C. 11.70	25-lb. coating I.C. 17.90
15-lb. coating I.C. 14.85	30-lb. coating I.C. 19.45
	40-lb. coating I.C. 21.65

Alloy Steel Bars

(F.o.b. Pittsburgh or Chicago)

S. A. E. Series Numbers	Base Per 100 Lb.
2100* (1/2% Nickel, 0.10% to 0.20% Carbon)	\$3.20 to \$3.25
2300 (3 1/4% Nickel)	4.50 to 4.60
2500 (5% Nickel)	5.70 to 5.80
3100 (Nickel Chromium)	5.50 to 5.60
3200 (Nickel Chromium)	5.90 to 5.25
3300 (Nickel Chromium)	7.00 to 7.25
3400 (Nickel Chromium)	6.25 to 6.50
5100 (Chromium Steel)	3.50
5200* (Chromium Steel)	7.00 to 7.50
6100 (Chrom. Vanadium bars)	4.20 to 4.30
6100 (Chrom. Vanad. spring steel)	3.80
9250 (Silicon Manganese spring steel)	3.20 to 3.25
Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.)	4.10 to 4.20
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chrom., 0.15 Vanad.)	4.45 to 4.55
Chromium Molybdenum bars (0.80—1.10 Chrom., 0.25—0.40 Molyb.)	4.25 to 4.35
Chromium Molybdenum bars (0.50—0.70 Chrom., 0.15—0.25 Molyb.)	3.40 to 3.50
Chromium Molybdenum spring steel (1—1.25 Chrom., 0.30—0.50 Molybdenum)	4.50 to 4.75

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2 1/2-in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

Rails

Per Gross Ton

Standard, f.o.b. mill.....	\$43.00
Light (from billets), f.o.b. mill.....	35.00 to 36.00
Light (from rail steel), f.o.b. mill.....	33.00 to 34.00
Light (from billets), f.o.b. Ch'go mill.....	36.00 to 38.00

Track Equipment

(F.o.b. Mill)

	Base Per 100 Lb.
Spikes, 1/2 in. and larger.....	\$2.80 to \$3.10
Spikes, 1/2 in. and smaller.....	3.00 to 3.50
Spikes, boat and barge.....	3.25
Track bolts, all sizes.....	4.00 to 4.50
Tie plates, steel.....	2.25 to 2.35
Angle bars.....	2.75

Welded Pipe

Base Discounts f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Inches	Steel	Black	Galv.	Inches	Iron	Black	Galv.
1/2.....	45	19 1/2	1/2 to 3/4.....	22	11	+	39
3/4.....	51	25 1/2	3/4.....	22	3		
1.....	56	42 1/2	1.....	28	11		
1 1/4.....	60	48 1/2	1 to 1 1/4.....	30	13		
1 1/2.....	62	50 1/2					

Lap Weld

2.....	55	43 1/2	2.....	23	7
2 1/2 to 6.....	59	47 1/2	2 1/2 to 4.....	24	11
7 and 8.....	56	43 1/2	3 to 6.....	28	13
9 and 10.....	54	41 1/2	7 to 12.....	26	11
11 and 12.....	53	40 1/2			

Butt Weld, extra strong, plain ends

1/2.....	41	24 1/2	1/2 to 3/4.....	+19	+54
3/4.....	47	30 1/2	3/4.....	21	7
1.....	53	42 1/2	1.....	28	13
1 1/4.....	58	47 1/2	1 to 1 1/4.....	30	14
1 1/2.....	60	49 1/2			
2 to 3.....	61	50 1/2			

Lap Weld, extra strong, plain ends

2.....	53	42 1/2	2.....	23	9
2 1/2 to 4.....	57	46 1/2	2 1/2 to 4.....	29	15
4 1/2 to 6.....	56	45 1/2	4 1/2 to 6.....	28	14
7 to 8.....	52	39 1/2	7 to 8.....	21	7
9 and 10.....	45	32 1/2	9 to 12.....	16	3
11 and 12.....	44	31 1/2			

To the large jobbing trade the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1 1/2 points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to large jobbers by one point with supplementary discounts of 5 and 2 1/2%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts f.o.b. Pittsburgh

Lap Welded Steel	Charcoal Iron
2 to 2 1/2 in.....	27
2 1/2 to 2 3/4 in.....	37
3 in.....	40
3 1/2 to 3 3/4 in.....	42 1/2
4 to 13 in.....	46
1 1/2 in.....	+13
2 1/2 to 3 in.....	+8
2 to 2 1/2 in.....	2
2 1/2 to 3 in.....	7
3 1/2 to 4 1/2 in.....	9

Beyond the above discounts, 5 to 7 five extra are given on lap welded steel tubes and 2 to 3 tens on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.....	60	3 in.....	45
1 1/4 to 1 1/2 in.....	62	3 1/4 to 3 1/2 in.....	47
1 1/2 in.....	36	4 in.....	50
2 to 2 1/4 in.....	31	4 1/2, 5 and 6 in.....	45
2 1/4 to 2 3/4 in.....	39		

Hot Rolled

2 and 2 1/4 in....	34	3 1/4 and 3 1/2 in..	50
2 1/4 and 2 3/4 in..	42	4 in.....	53
3 in.....	48	4 1/2, 5 and 6 in..	48

Less carloads, 4 points less. Add \$5 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Per Cent Off List

Carbon, 0.10% to 0.30%, base.....	50 to 55
Carbon, 0.30% to 0.40%, base.....	45 to 50

Plus differentials for lengths over 18 ft. and for commercially exact lengths. Warehouse discounts on small lots are less than the above.

Tin Plate.—Manufacturers are well satisfied with conditions. Consumers have specified liberally against contracts, and in point of mill engagement no other year having seen higher operations in the first quarter. Specifications against May shipments are due next Monday and a month later those for June delivery. There is nothing to suggest that all stock contracted for will not be ordered out. There is still an active market for stock items, and supplies being small, they are bringing relatively high prices.

Cold-Finished Steel Bars and Shafting.—Most makers have opened books for second quarter business at unchanged prices, or 2.50c., base Pittsburgh, for ordinary tonnages. With this announcement is one of an extra 10c. per 100 lb. on shipments of less than 24,000 lb. The practice has grown up among large buyers to specify for small lots at a time, and makers feel that the expense of handling less-than-carload lots rightfully should be borne by the buyers. Demand for cold-finished bars is very steady, but there is not much tendency to buy ahead of nearby requirements.

Hot-Rolled Flats.—Backlogs are melting away because incoming business lately has not been equaling shipments. Fresh demands are steady enough, but generally call for small lots for early delivery. Prices are holding well. They are given on page 717.

Cold-Rolled Strips.—The demand from the automotive industry is greater than it has been, but makers generally cut down their obligations last month when shipments exceeded new business, and rolling schedules are not very extended. There are very few deviations from 3.90c., base Pittsburgh or Cleveland.

Bolts, Nuts and Rivets.—Makers here continue to report a satisfactory business in bolts and nuts. Generally, there has not been such confident buying by consumers and jobbers since 1923. Makers are continuing prices, which now have held for 15 months, on second quarter contracts. Concessions from the contract price of \$2.60, base per 100 lb., on large rivets are still reported, but it is said that those making lower prices are filled up to a point where they cannot make such prompt delivery as they could a short time ago. Prices and discounts are given on page 719.

Coke and Coal.—Curtailement of production in the Connellsville district has very materially reduced the offerings of coke which must be moved, and the market is somewhat stronger in consequence. There are occasional sales of 48-hr. coke at \$3 per net ton at ovens, but on standard furnace grade \$3.25 is more representative of the ruling market, and some business has been done up to \$3.50. There is enough demand for spot foundry coke to sustain last week's prices. Demands upon the pig iron producers being very light, they are in no hurry to enter into negotiations for second quarter coke tonnages. By waiting they believe they will be able to secure supplies at more favorable terms than now are offered. Generally, the coke producers are figuring on \$3.50 on second quarter tonnages, while \$3 represents the average view of blast furnace operators. An inquiry for 15,000 tons per month for second quarter from the Wickwire Spencer Steel Corporation, Buffalo, has reached the market through brokers. The coal market continues to suffer in demand and price from congestion of anthracite substitutes in Eastern markets. Prices are on page 719.

Old Material.—There have been sales of heavy melting steel in this market since a week ago at prices all the way from \$17.50 to \$18.50. Just following the report of a week ago, an Ohio River steel company secured several lots aggregating about 8000 tons at \$17.50, but since then smaller tonnages have been moved at \$17.75, \$18 and even \$18.50, and the market today does not appear quotable below \$18, although there are some mills that are unwilling to pay more than \$17.50. The advances of a week ago in machine shop turnings and heavy breakable cast scrap have not been maintained. A considerable tonnage of machine shop turnings was sold to an Allegheny Valley steel maker at \$13.50, and that is both the top and bottom of the market on that grade. Sales are not possible at \$14, and dealers are paying \$13.50 against short orders. Two Youngstown district steel makers were

recent buyers of heavy melting steel and paid \$17, it is reported, although with dealers offering \$17, it is believed here that a higher price was paid by the buyers. The Norfolk & Western is taking bids until noon, March 12, on 4530 gross tons of scrap.

We quote for delivery to consumer's mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel.....	\$17.50 to \$18.50
No. 1 cast, cupola size.....	17.00 to 17.50
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	19.00 to 19.50
Compressed sheet steel.....	15.50 to 16.00
Bundled sheets, sides and ends..	14.50 to 15.00
Railroad knuckles and couplers..	20.50 to 21.00
Railroad coil and leaf springs..	20.00 to 20.50
Low phosphorus blooms and billet ends	22.00 to 22.50
Low phosphorus plates and other material	19.50 to 20.00
Low phosphorus punchings.....	19.50 to 20.00
Steel car axles	22.00 to 23.00
Cast iron wheels	18.00 to 18.50
Rolled steel wheels	20.00 to 20.50
Machine shop turnings.....	13.50
Short shoveling turnings.....	13.50
Sheet bar crops	20.00 to 20.50
Heavy steel axle turnings	16.00 to 16.50
Short mixed borings and turnings	13.50
Heavy breakable cast.....	15.50 to 16.00
Cast iron borings.....	13.50
No. 1 railroad wrought.....	13.00 to 13.50
No. 2 railroad wrought.....	17.50 to 18.50

Cincinnati Metal Trades Meeting

Reports from members indicate that business will be fairly good throughout the first half of 1926, according to Paul C. DeWolf, president National Metal Trades Association, in an address at the annual banquet of the Cincinnati branch which was held at the Business Men's Club in that city on March 4. He declared that in 1925 there was an increased production per man and the year passed without a single strike in the shops of association members.

The national office of the association, he said, will publish shortly a report on group insurance for the benefit of its members. Reports on compensation insurance and on wage payment methods are now being prepared. The relation of accident prevention work in shops to the premium rate on compensation insurance is the subject of an intensive study at present.

That management has never been given proper recognition as a vital factor in industry was the declaration of H. D. Sayre, national commissioner, in a short talk. J. M. Manley, secretary, Cincinnati branch, in making his annual report, appealed to executives to employ as many young men as apprentices as possible and urged that the latter be treated in a helpful manner.

E. A. Muller, vice-president and general manager King Machine Tool Co., was reelected president of the association. Other officers for the coming year will be David C. Jones, first vice-president and general manager Lunkenheimer Co., vice-president; James E. Mills, president and general manager Smith & Mills Co., secretary; and John Christensen, president Cincinnati Gear Co., treasurer. The executive committee will consist of A. B. Breeze, vice-president and treasurer Cincinnati Ball Crank Co.; John Hargrave, president Cincinnati Tool Co.; and S. F. Kemper, president American Oil Pump & Tank Co.

Detroit Scrap Has Firmer Tone

DETROIT, March 9.—While the market on old material in this district has been very quiet during the past week, there has been no evidence of further decline, and there is an undertone of firmness on the present basis of prices.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate. No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	\$13.50 to \$14.00
Borings and short turnings.....	10.00 to 10.50
Long turnings	9.00 to 9.50
No. 1 machinery cast	17.00 to 18.00
Automobile cast	23.00 to 24.00
Hydraulic compressed	11.75 to 12.25
Stove plate	13.50 to 14.50
No. 1 busheling	11.75 to 12.25
Sheet clippings	7.00 to 7.50
Flashings	10.50 to 11.00

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Semi-Finished Steel F.o.b. Pittsburgh or Youngstown

Billets and Blooms	Per Gross Ton
Rolling, 4-in. and over.....	\$35.00
Rolling, 2-in. and smaller.....	\$6.00
Forging, ordinary	40.00
Forging, guaranteed	45.00

Sheet Bars	Per Gross Ton
Open-hearth or Bessemer.....	\$36.00

Slabs	Per Gross Ton
8 in. x 2 in. and larger.....	\$35.00
6 in. x 2 in. and smaller.....	\$6.00

Skelp	Per Lb.
Grooved	1.90c.
Sheared	1.90c.
Universal	1.90c.

Wire Rods	Per Gross Ton
*Common soft, base, No. 5 to 1/4-in.....	\$45.00
Common soft, coarser than 1/4-in.....	\$2.50 over base
Screw stock	\$5.00 per ton over base
Carbon 0.20% to 0.40%	3.00 per ton over base
Carbon 0.41% to 0.55%	5.00 per ton over base
Carbon 0.56% to 0.75%	7.50 per ton over base
Carbon over 0.75%	10.00 per ton over base
Acid	15.00 per ton over base

*Chicago mill base is \$46. Cleveland mill base, \$45.

Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Ports	Per Gross Ton
Old range Bessemer, 51.50% iron.....	\$4.55
Old range non-Bessemer, 51.50% iron.....	4.40
Mesabi Bessemer, 51.50% iron.....	4.40
Mesabi non-Bessemer, 51.50% iron.....	4.25
High phosphorus, 51.50% iron.....	4.15

Foreign Ore, c.i.f. Philadelphia or Baltimore

	Per Unit
Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algerian.....	9.50c. to 10c.
Iron ore, Swedish, average 66% iron.....	9.50c.
Manganese ore, washed, 51% manganese, from the Caucasus.....	45c.
Manganese ore, Brazilian or Indian, nominal	42c. to 44c.
Tungsten ore, high grade, per unit, in 60% concentrates	\$12.50 to \$14.00

Per Ton

Chrome ore, Indian basic, 48% Cr₂O₃, crude, c.i.f. Atlantic seaboard.....

Per Lb.

Molybdenum ore, 85% concentrates of MoS₃, delivered

Coke	Per Net Ton
Furnace, f.o.b. Connellsville prompt	\$3.25 to \$3.50
Foundry, f.o.b. Connellsville prompt	4.50 to 5.50
Foundry, by-product, Ch'go ovens	10.50
Foundry, by-product, New England, del'd	13.00
Foundry, by-product, Newark or Jersey City, delivered.....	11.52
Foundry, Birmingham	5.50
Foundry, by-product, St. Louis or Granite City	10.00

Coal	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	\$1.50 to \$2.00
Mine run coking coal, f.o.b. W. Pa. mines	1.90 to 2.25
Mine run gas coal, f.o.b. W. Pa. mines	1.90 to 2.15
Steam slack, f.o.b. W. Pa. mines.....	1.15 to 1.25
Gas slack, f.o.b. W. Pa. mines.....	1.35 to 1.40

Ferromanganese

	Per Gross Ton
Domestic, 80%, furnace or seab'd.....	\$100.00
Foreign, 80%, Atlantic or Gulf port, duty paid	\$100.00 to 110.00

Spiegeleisen

Per Gross Ton Furnace	
Domestic, 19 to 21%	\$32.00 to \$34.00
Domestic, 16 to 19%	\$1.00 to \$3.00

Electric Ferrosilicon

Per Gross Ton Delivered	
50%	\$85.00
75%	145.00
Per Gross Ton Furnace	Per Gross Ton Furnace
10%	\$42.00
11%	42.00
12%	\$42.00
14 to 16%	\$45 to 46.00

Bessemer Ferrosilicon

F.o.b. Jackson County, Ohio, Furnace			
Per Gross Ton		Per Gross Ton	
10%	.....\$36.00	12%	.....\$40.00
11%	.....38.00		

Silvery Iron

F.o.b. Jackson County, Ohio, Furnace			
Per Gross Ton		Per Gross Ton	
6%	.....\$28.50	10%	.....\$34.00
7%	.....29.50	11%	.....36.00
8%	.....30.50	12%	.....38.00
9%	.....32.00		

Other Ferroalloys

Ferrotungsten, per lb. contained metal, del'd	\$1.15 to \$1.20
Ferrochromium, 4% carbon and up, 60 to 70% Cr., per lb. contained Cr. delivered	11.50c.
Ferrovandium, per lb. contained vanadium, f.o.b. furnace	\$3.25 to \$4.00
Ferrocobaltititanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads.....	\$200.00
Ferrophosphorus, electrolytic, or blast furnace material, in carloads, 18% Rockdale, Tenn., base, per net ton.....	\$91.00
Ferrophosphorus, electrolytic, 24%, f.o.b. Anniston, Ala., per net ton.....	\$122.50

Fluxes and Refractories

Fluorspar

	Per Net Ton
Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines.....	\$18.00
No. 2 lump, Illinois and Kentucky mines.....	\$30.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid.....	\$18.60 to \$19.10
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2 1/4% silica, f.o.b. Illinois and Kentucky mines.....	\$31.50

Fire Clay

	Per 1000 f.o.b. Works	
	High Duty	Moderate Duty
Pennsylvania ...	\$43.00 to \$46.00	\$40.00 to \$43.00
Maryland	48.00 to 50.00	43.00 to 45.00
Ohio	43.00 to 46.00	40.00 to 43.00
Kentucky	43.00 to 45.00	40.00 to 43.00
Illinois	43.00 to 45.00	40.00 to 43.00
Missouri	40.00 to 43.00	35.00 to 38.00
Ground fire clay, per ton.....		6.50 to 7.50

Silica Brick

	<i>Per 1000 f.o.b. Works</i>
Pennsylvania	\$40.00
Chicago	49.00
Birmingham	54.00
Silica clay, per ton.....	\$5.00 to 9.00

Magnesite Brick

	Per Net Ton
Standard size, f.o.b. Baltimore and Chester, Pa.	\$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	49.00

Chrome Brick

	Per Net Ton
Standard size	\$43.00

Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts

(Less-than-Carload Lots)
(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)

Chicago)

Per Cent Off List

Machine bolts, small, rolled threads.....	60 and 10
Machine bolts, all sizes, cut threads.....	50, 10 and 10
Carriage bolts, smaller and shorter, rolled threads	50, 10 and 10
Carriage bolts, cut threads, all sizes.....	50 and 10
Eagle carriage bolts.....	65 and 10
Lag bolts	60, 10 and 10
Plow bolts, Nos. 3 and 7 heads.....	50 and 10

*F.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent more than above for car lots. On hot-pressed and cold-punched nuts the discount is 25c. more per 100 lb. than quoted above for car lots.

Bolts and Nuts

(Quoted with actual freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Semi-finished hexagon nuts:	
1/4 in. and smaller, U. S. S.....	80, 10 and 5
1/2 in. and larger, U. S. S.....	75, 10 and 5
Small sizes, S. A. E.....	80, 10, 10 and 5
S. A. E., 1/2 in. and larger.....	75, 10, 10 and 5
Stove bolts in packages.....	80, 10 and 5
Stove bolts in bulk.....	50, 10, 5 and 2 1/2
Tire bolts	60 and 5

Semi-Finished Castellated and Slotted Nuts

(Actual freight allowed up to but not exceeding 50c. per 100 lb.)

(To jobs and consumers in large quantities)					
Per 100 Net			Per 100 Net		
S.A.E. U.S.S.			S.A.E. U.S.S.		
1/4-in....	\$0.44	\$0.44	1/4-in....	\$2.35	\$2.40
1/2-in....	0.515	0.515	1/2-in....	3.60	3.60
3/4-in....	0.62	0.66	1-in....	5.45	5.80
1-in....	0.79	0.90	1 1/4-in....	8.90	8.90
1 1/4-in....	1.01	1.05	1 1/2-in....	12.60	13.10
1 1/2-in....	1.25	1.42	1 3/4-in....	18.35	18.35
2-in....	1.70	1.78	2-in....	21.00	21.00

Larger sizes.—Prices on application.

Large Rivets

	Base Per 100 Lb.
F.o.b. Pittsburgh	\$2.50 to \$3.00
F.o.b. Cleveland	2.70
F.o.b. Chicago	2.75

Small Rivets

	Per Cent Off List
F.o.b. Pittsburgh	70 and 10
F.o.b. Cleveland	70 and 10
F.o.b. Chicago	70 and 10 to 70 and 5

Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Milled cap screws.....	80 and 10
Milled standard set screws, case hardened.....	80
Milled headless set screws, cut thread.....	80
Upset hex. head cap screws, U. S. S. thread, 80, 10 and 10	80, 10 and 10
Upset hex. cap screws, S. A. E. thread, 80 and 10	80 and 10
Upset set screws.....	80, 10 and 10 to 80, 10 and 5
Milled studs	70 and 5

Chicago

Another Steel Works Stack Blown In— Stalemate in Pig Iron Market

CHICAGO, March 9.—The Illinois Steel Co. has blown in its ninth stack at South Chicago, this being a gain of two stacks in as many weeks. Eleven stacks are still active at Gary and one at Joliet, so that the Corporation is now blowing all but six of its 27 furnaces in this district. The bulk of the tonnage rolled at the South Chicago works consists of structural shapes, plates, light rails, billets and sheet bars. Iron coming from the two furnaces recently blown in is going into steel production and is not being added to yard stocks, which are said to be normal, taking into consideration the present rate of operations. With independents blowing eight stacks, the number of steel works furnaces in blast is 29 out of a total of 35. The rate of ingot production shows a tendency to increase slightly.

The tone of the Chicago finished steel market has stiffened within the week, and prices are steadier than at any time since the holiday period. New business so far in March is running fully 20 per cent above the corresponding period in February. New bookings are a shade ahead of shipments, while specifications are materially heavier than the deliveries mills find it possible to make.

Local mills expect to participate heavily in the 100,000 tons of car material which is now on inquiry. Builders are anxious to get under way at an early date on the construction of cars recently placed and are pressing for prompt shipment from the mills.

Some improvement is shown in the demand for soft steel bars. Plates, however, are showing the most added strength. Local makers have booked 12,000 tons, 8000 tons of which are for oil storage tanks for a new field in the panhandle district of Texas. Rail shipments continue heavy and new bookings of fastenings include 8000 tons of rail joints and 20,000 kegs of spikes and bolts. Fabricators have had another busy week and have added approximately 15,000 tons to shop obligations.

Little of consequence has developed in the merchant pig iron market, with prices unchanged although largely nominal in the absence of a real test of the market.

Dealers find no signs of strength in the scrap market, and some take the attitude that no material stiffening can take place until spring offerings have been absorbed.

Ferroalloys.—Ferromanganese is quoted \$100, sea-board, or \$107.56, delivered Chicago. This reduction of \$15 has not attracted buyers, who evidently anticipate that the price may recede still further. No sales are reported for the week. Specifications for 50 per cent ferrosilicon are liberal, but buyers are apparently well covered and no new sales have been made. Spiegel-eisen is quiet and is being quoted on the basis of \$34, furnace, or \$41.76, delivered Chicago, for the 18 to 22 per cent grade.

We quote 80 per cent ferromanganese, \$107.56, delivered Chicago; 50 per cent ferrosilicon, \$85, delivered; spiegel-eisen, 18 to 22 per cent, \$41.76, delivered Chicago.

Pig Iron.—This market is without feature and remains on the whole as during the previous week. Large users continue to remain out of the market, and are content to stand by and watch the trend of events before making known their second quarter requirements. In the mean time a small amount of hand-to-mouth buying is taking place at \$23, furnace, for Northern No. 2 foundry iron. Sellers believe that users' stocks are small and that a waiting policy cannot be continued for many weeks to come. On the other hand, it is thought that the present quick delivery purchases reflect a desire on the part of buyers to delay the time when they will have to come into the market and place large tonnages. Shipments so far in March are averaging slightly better than during the corresponding period of February. Melters, on the whole, are busy, with the possible exception of the heavy jobbing foundries in the immediate Chicago district. A few

scattered carlot sales of charcoal iron are reported at \$29.04, delivered.

Quotation on Northern foundry, high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75 to 2.25	\$23.00
Northern No. 1 foundry, sil. 2.25 to 2.75	23.50
Malleable, not over 2.25 sil.	23.00
High phosphorus	23.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (all rail)	\$27.01 to 28.01
Southern No. 2 (barge and rail) ..	26.18 to 27.18
Low phosph., sil. 1 to 2 per cent, copper free	31.20 to 31.70
Silvery, sil. 8 per cent.	35.29
Ferrosilicon, 14 to 16 per cent.	48.79

Plates.—Mills report that between 75,000 and 100,000 tons of steel for railroad equipment recently ordered will be placed within the week. A Mid-Western car builder will require 12,000 tons of plates, shapes and bars for the Southern Pacific cars placed this week, and another company which has an order for 500 hopper cars for the same railroad has not decided whether it will build the cars in its Eastern or Western shops. The Northern Pacific inquiry calling for 1000 50-ton automobile cars is active, and car builders expect the Burlington to place 500 hopper cars in the near future. Chicago mills have booked 12,000 tons of plates for oil tanks during the week, approximately 8000 tons being for tanks for a new field now being opened in the Panhandle district of Texas. If this field develops as the promoters anticipate, it will be the source of additional large tank orders.

The mill quotation is 2.10c., Chicago. Jobbers quote 3.10c. for plates out of stock.

Structural Material.—Fabricators have booked 15,000 tons of work during the week. The American Bridge Co. took contracts totaling to 10,000 tons, and independent shops took 5000 tons. Mill bookings for the week amounted to about 9000 tons. Among the outstanding awards of the week are 3000 tons for a University of Chicago stadium and 2900 tons for the Roanoke Building, Chicago. The Harmon Sport Arena, requiring 5000 tons, is an active pending project. Competition among fabricators is keen, and the general level of bids remains unchanged. Mills report that the demand for shapes has increased materially within the last few weeks.

The mill quotation on plain material is 2.10c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

Bars.—In soft steel bars both sales and specifications are heavier than during the previous week. The manufacturing trade is entering the market rather freely, but jobbers and reinforcing bar benders are slow in making their requirements known. Mild steel bars are unchanged at 2.10c., Chicago. Alloy steel bar makers report that new business and specifications are liberal and that mill operations continue full. Rail steel bar mills are shipping reinforcing bars largely from stock, and new production is going into fence posts, for which specifications are heavy. Rail steel bars are steady at 2c., Chicago. Makers of bar iron find encouragement in the volume of new business placed within the week. Individual sales are small, but sufficiently numerous to keep mills fairly busy. Users are asking for prompt shipment, and mills are having no difficulty in meeting this demand. Bar iron is still quotable at 2c., Chicago.

Mill prices are: Mild steel bars, 2.10c., Chicago; common bar iron, 2c., Chicago; rail steel bars, 2c., Chicago.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.60c. for rounds and hexagons and 4.10c. for flats and squares; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.60c., Chicago warehouse.

Wire Products.—Makers have opened books for second quarter business at unchanged prices. The demand for wire products has shown a material increase during the week, although makers report that distribution to jobbers has slowed up somewhat because of prevailing weather conditions. Users are still disinclined to specify ahead and are content to rely upon prompt ship-

ments from the mills. Mill operations are unchanged at about 65 per cent of capacity. Makers have fair stocks on hand and are not disposed to crowd mill production beyond the actual demands of the trade. Railroads are actively placing their requirements for the second quarter. Mill prices are shown on page 717.

We quote warehouse prices f.o.b. Chicago: No. 8 black annealed wire, \$3.30 per 100 lb.; common wire nails, \$3.05 per keg; cement-coated nails, \$2.05 to \$2.20 per count keg.

Cold-Rolled Strips.—Demand has materially increased with the expansion in automobile production. Mill operations remain as during the previous week, quotations are still 3.90c., Cleveland, or 4.20c., Chicago.

Rails and Track Supplies.—Fresh rail business for the week was light, but local mills booked 8000 tons of rail joints, 2500 tons of tie plates, 10,000 kegs of spikes and 10,000 kegs of track bolts. Light rails, of which only 300 tons were placed during the week, are still quoted at \$36 to \$38, f.o.b. mill.

Standard Bessemer and open-hearth rails, \$43; light rails, rolled from billets, \$36 to \$38 per gross ton, f.o.b. maker's mill.

Standard railroad spikes, 2.90c. to 3c., mill; track bolts with square nuts, 3.90c. to 4c. mill; steel tie plates, 2.25c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of Chicago warehouse at 3.55c., base, and track bolts, 4.55c., base.

Sheets.—The last week, particularly the last few days, has shown a decided improvement both in new orders and specifications, which are being received at a rate in excess of the ability of makers to ship. Second quarter buying has been heavier than mills expected it would be during the first week that books have been opened. The greatest demand is for blue annealed sheets, on which mills are scheduled for from five to six weeks. Black and galvanized schedules do not extend more than two to three weeks.

Chicago delivered prices from mill are 3.50c. for No. 28 black, 2.65c. for No. 10 blue annealed and 4.75c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago: 3.50c. base for blue annealed, 4.10c. base for black, and 5.25c. base for galvanized.

Billets.—Demand is good and rolling billets, 4 in. and over, are quoted at \$35 per gross ton. A large maker of hot-rolled and cold-rolled strips is said to be in the market for 30,000 tons of 1½-in. billets for the second quarter.

Bolts, Nuts and Rivets.—Second quarter contracts are now being signed, and makers find that users are not in the least hesitant in placing their requirements. Indications are that the trade will specify fully against first quarter contracts. Small rivets are slightly firmer at 70 and 10 to 70 and 5 per cent off list. Large rivets are unchanged at \$2.75, base, per 100 lb., Chicago.

Jobbers quote structural rivets, 3.50c. per lb.; boiler rivets, 3.70c. per lb.; machine bolts up to ¾ x 4 in., 50 and 5 per cent off; larger sizes, 50 and 5 off; carriage bolts up to ¾ x 4, 47½ off; larger sizes, 47½ off; hot-pressed nuts, square, tapped or blank, \$3.25 off; hot-pressed nuts, hexagons, tapped or blank, \$3.75 off; coach or lag screws, 55 and 5 per cent off.

Hot-Rolled Strips.—Users are placing liberal tonnages with mills, and prices are unchanged at 2.60c., base, per lb., Chicago, for all gages 6 in. wide and narrower, and 2.50c. for wider material.

Cast Iron Pipe.—Chicago closed with the United States Cast Iron Pipe & Foundry Co. for 5600 tons of 30, 36 and 48-in. pipe at \$39.95, Birmingham, or \$48.15, delivered Chicago. James B. Clow & Sons bid \$41, Birmingham, on a part of the 30 and 48-in. pipe. The South Park Commission, Chicago, is in the market for 750 tons of 2 to 14-in. Class B pipe, and Manitowoc, Wis., will close March 11 on 275 tons of 12-in., on which alternate bids are being taken on Class B, Class C and De Lavaud centrifugal pipe. Mansfield, Ohio, will take bids March 19 on 97 tons of 6 and 8-in. Class C and 23 tons of 4-in. Class C pipe. Evansville, Ind., will receive tenders March 11 on 400 tons of 4, 6 and 8-in. Class C. Sullivan, Ill., placed 400 tons of 10-in. Class B De Lavaud pipe with the National Cast Iron Pipe Co. The Chicago market is still generally quotable at \$41 to \$42, base Birmingham, or \$49.20 to \$50.20, delivered, for 6-in. and larger sizes, but current prices on

average tonnages are easing off toward the lower figure.

We quote per net ton, delivered Chicago, as follows: Water pipe, 4-in., \$53.20 to \$54.20; 6-in. and over, \$49.20 to \$50.20; Class A and gas pipe, \$4 extra.

Reinforcing Bars.—This market is quiet both from the standpoint of fresh inquiries and contracts awarded. Potentially there is a large volume of business represented by projects now in the early stages of preparation but for some reason, which is not clear to dealers, it is slow in developing. Shops are fairly busy and probably can maintain the present rate of operation for four or five weeks on releases against old contracts, plus the small tonnage placed from day to day. In the immediate Chicago territory dealers are quoting 2.60c. per lb. Chicago warehouse, on the average small inquiry. In outlying districts competition, even on small tonnage projects, has forced prices down. At Indianapolis several Indiana State bridge projects, totaling 200 tons, brought dealers 2.10c. to 2.15c., Chicago warehouse. Illinois road work, which is now up for figures, will probably be placed with rail steel bar makers, but billet bar dealers have hopes that soft steel bars will be specified for the bridge work. A survey now in the hands of Chicago dealers indicates that the expenditure for building construction this year will approximate that of 1925. In shipments, bar benders have just closed the heaviest February in their history. Fresh inquiries and current lettings are given on page 730.

Old Material.—Whatever degree of hopefulness dealers may have held last week has been dispelled by weakness shown in the last few days. Within the past few weeks some brokers have bid up railroad lists, and it was generally assumed that the tonnage was to be applied against old obligations. Now, however, it develops that there was some speculation in the move, and the failure of the market to strengthen has forced liquidation. Large users are still out of the market, and although they are offering to pay \$14.25 for heavy melting steel, they find dealers unwilling to do business at that figure for the reason that there are still some \$15 contracts uncovered. Transactions are confined almost wholly to trading among dealers and when a user does place an order, it is only of carlot proportions. As a general thing, the trade is pessimistic as to the immediate future, pointing to the fact that spring shipments, while not expected to be as heavy this year as in previous years, will bring added material to a market which is already oversupplied.

We quote delivered in consumers' yards, Chicago and vicinity, all freight and transfer charges paid for all items except relaying rails, including angle bars to match, which are quoted f.o.b. dealers' yards:

Per Gross Ton	
Heavy melting steel.....	\$14.00 to \$14.25
Frogs, switches and guards, cut apart.....	15.50 to 16.00
Shoveling steel.....	13.75 to 14.00
Hydraulic compressed sheets.....	12.25 to 12.75
Drop forge flashings.....	11.00 to 11.50
Forged, cast and rolled steel car wheels.....	18.50 to 19.00
Railroad tires, charging box size.....	18.50 to 19.00
Railroad leaf springs, cut apart.....	18.50 to 19.00
Steel couplers and knuckles.....	17.00 to 17.50
Coil springs.....	19.00 to 19.50
Low phos. punchings.....	18.00 to 18.50
Axle turnings.....	15.25 to 15.75
Relaying rails, 56 lb. to 60 lb.....	25.00 to 26.00
Relaying rails, 65 lb. and heavier.....	26.00 to 31.00
Rerolling rails.....	16.50 to 17.00
Steel rails, less than 3 ft.....	17.50 to 18.00
Iron rails.....	16.50 to 17.00
Cast iron borings.....	11.75 to 12.25
Short shoveling turnings.....	11.75 to 12.25
Machine shop turnings.....	8.75 to 9.25
Railroad malleable.....	17.75 to 18.25
Agricultural malleable.....	16.50 to 17.00
Angle bars, steel.....	16.50 to 17.00
Cast iron car wheels.....	17.00 to 17.50

Per Net Ton	
No. 1 machinery cast.....	17.00 to 17.50
No. 1 railroad cast.....	15.75 to 16.25
No. 1 agricultural cast.....	15.75 to 16.25
Stove plate.....	14.00 to 14.50
Grate bars.....	13.25 to 13.75
Brake shoes.....	12.50 to 13.00
Iron angle and splice bars.....	15.75 to 16.25
Iron arch bars and transoms.....	20.50 to 21.00
Iron car axles.....	25.00 to 25.50
Steel car axles.....	17.50 to 18.00
No. 1 railroad wrought.....	13.00 to 13.50
No. 2 railroad wrought.....	12.25 to 12.75
No. 1 busheling.....	11.25 to 11.75
No. 2 busheling.....	8.75 to 9.25
Locomotive tires, smooth.....	16.50 to 17.00
Pipes and flues.....	10.00 to 10.50

San Francisco

Structural Awards Total 10,820 Tons, But General Buying Is Sluggish

SAN FRANCISCO, March 5 (*By Air Mail*).—Except in structural material, buying during the past week has been somewhat sluggish and no fresh inquiries of importance have come into the market. Building in San Francisco and the East Bay cities continues to forge ahead at a pace which indicates that another record will be established this year. There were 780 building permits issued in San Francisco during February having a total value of \$4,711,886, which represents a gain of nearly 22 per cent over the corresponding month of last year. The January total was \$5,153,504, a gain of \$1,749,881 over January a year ago, making a total gain of approximately 30 per cent over the first two months of 1925.

Pig Iron.—Current sales are small, and no inquiries of note have developed. Local foundries are only moderately active. Prices are unchanged.

*Utah basic	\$27.00 to \$28.00
*Utah foundry, sil. 2.75 to 3.25...	27.00 to 28.00
**English foundry, sil. 2.75 to 3.25.	25.00 to 26.00
**Belgian foundry, sil. 2.75 to 3.25.	24.00
**Dutch foundry, sil. 2.75 to 3.25...	24.00
**Indian foundry, sil. 2.75 to 3.25...	24.00 to 25.00
**German foundry, sil. 2.75 to 3.25.	24.00
**Chinese foundry, sil. 3 to 3.50...	25.50

*Delivered San Francisco.

**Duty paid, f.o.b. cars San Francisco.

Shapes.—The six structural steel jobs closed during the week total 10,820 tons, which is the largest aggregate tonnage placed in any individual week this year. The largest award of the week, 9500 tons for the Russ Building, San Francisco, went to the United States Steel Products Co. This is one of the largest structural jobs placed in some time in San Francisco. Fresh inquiries call for 850 tons. Eastern mill quotations on plain material are firm at 2.35c. per lb., c.i.f. Coast ports.

Plates.—Contracts reported closed during the week total 3345 tons. The largest individual letting, 2020 tons for tanks for the Union Oil Co., Los Angeles, was taken by the Western Pipe & Steel Co. of California. No fresh inquiries of importance have come up for figures. The opening of bids on the penstock job for the city of Los Angeles, calling for about 1500 tons, has been postponed for two weeks. The city of Mount Shasta, Cal., which recently postponed calling for bids on 100 tons for a pipe line, has set March 12 as the new closing date. While 2.30c. per lb., c.i.f. Coast ports, is being asked by most of the Eastern mills, some buyers believe 2.25c. is possible on good-sized tonnages, in spite of the fact that no business is known to have been closed at that figure during the past week.

Bars.—A fairly large number of individual concrete bar jobs calling for less than 100 tons have been awarded during the week, but no project taking more than that tonnage is known to have been let. A viaduct on Seventh Street, Los Angeles, calling for 814 tons, has come up for figures, and a tunnel in San Francisco requires 650 tons. Local reinforcing bar jobbers quote as follows: 2.80c., base per lb. on lots of 250 tons; 2.95c., base per lb. on carload lots, and 3.20c., base, on less-than-carload lots.

Cast Iron Pipe.—Bids have closed on several large inquiries, but no action has yet been taken in the matter of awarding contracts. Redwood City, Cal., has awarded 100 tons of 4 and 6-in. Class B to the Grinnell Co. of the Pacific, and the North Sacramento Light & Water Co., Sacramento, Cal., has placed 142 tons of 4 and 6-in. Class B with B. Nicoll & Co. The city of Santa Monica, Cal., will close bids March 10 on 3500 tons. Prices are unchanged at \$50 to \$52 base, water shipment, San Francisco.

Steel Pipe.—The Pacific Gas & Electric Co., San Francisco, has placed 1500 tons of 6% to 16-in., O. D. line pipe with an unnamed firm, and the Associated Oil

Co., San Francisco, has placed 210 tons of 8-in. line pipe with an unidentified company.

Warehouse Business.—General sales are fair in volume, but individual orders continue relatively small. Prices are unchanged.

Local warehouse prices, per 100 lb., are as follows: Merchant bars, \$3.30 base; merchant bars, $\frac{5}{8}$ in. and under, rounds, squares and flats, \$3.80 base; soft steel bands, \$4.15 base; angles, $\frac{1}{4}$ in. and larger x $1\frac{1}{2}$ in. to $2\frac{3}{4}$ in., incl., \$3.30 base; channels and tees, $\frac{3}{4}$ in. to $2\frac{3}{4}$ in., incl., \$3.90 base; angles, beams and channels, 3 in. and larger, \$3.30 base; tees, 3 in. and larger, \$3.30 base; universal mill plates, $\frac{1}{4}$ in. and heavier, stock lengths, \$3.30 base; spring steel, $\frac{1}{4}$ in. and thicker, \$6.30 base; wire nails, \$3.50 base; cement coated nails, \$3 base; No. 10 blue annealed sheets, \$3.75; No. 28 galvanized sheets, \$6; No. 28 black sheets, \$4.75.

Rails and Track Supplies.—The Pacific Fruit Express Co., San Francisco, has placed 6500 tons of car axles with an unnamed mill. The engineering department of the Western Pacific Railroad Co., Mills Building, San Francisco, is preparing plans for various improvements and additions to the system which will be carried out this year.

Coke.—Little new business has developed, and current sales are mostly for small quantities. Importers quote as follows:

English beehive, \$15 to \$16 per ton at incoming dock, and English by-product, \$12 to \$14; German by-product, \$11.50 to \$12.

Old Material.—Prices are unchanged and current buying is of a routine nature.

Prices for scrap delivered to consumers' yards are as follows:

	Per Gross Ton
No. 1 heavy melting steel.....	\$11.50 to \$12.00
Scrap rails, miscellaneous.....	11.50 to 12.00
Rolled steel wheels.....	11.50 to 12.00
Couplers and knuckles.....	11.50 to 12.00
Country mixed scrap.....	8.00 to 8.50
Mixed borings and turnings.....	6.00 to 6.50
No. 1 cast scrap.....	19.50 to 20.00

St. Louis

Little Second Quarter Iron Buying in Sight—Plate Demand from Oil Fields

ST. LOUIS, March 9.—Apathy characterizes the attitude of pig iron buyers in this district. Most melters have sufficient pig iron in stock or contracted for to last them for the next 60 to 90 days, and they are not concerned further than that. It is not expected that there will be any great amount of buying, therefore, during the second quarter. Jobbing foundries are curtailing their operations, while others remain fairly active. Northern iron is nominally held at \$23, base Chicago, but, as has been pointed out before, sales have been made at \$21 to melters in this district and it is reported that any considerable tonnage could be placed at \$20. The St. Louis Coke & Iron Corporation during the week sold 500 to 600 tons of foundry grades in small lots for prompt shipment. Inquiries total 500 to 700 tons in lots ranging from a carload to 100 tons.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices, \$2.16 freight from Chicago, \$4.42 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25...	\$25.16
Northern malleable, sil. 1.75 to 2.25	25.16
Basic	25.16
Southern fdy., sil. 1.75 to 2.25...	\$26.42 to 27.92
Granite City iron, sil. 1.75 to 2.25.	24.31 to 24.81

Coke.—Foundry coke continues in good demand among the St. Louis consumers. The demand for domestic coke has eased up considerably, but by-product producers here say that the volume of business is much greater than they had expected in view of the settlement of the anthracite strike.

Finished Iron and Steel.—The only bright spot in these lines is a good demand for tank plates, as well as other material, from the mid-Continent oil fields. Structural business is quiet here. Reinforcing bar demand also is inactive, the only pending project of con-

sequence being an addition to St. Anthony's Hospital, St. Louis, 150 tons. There is no demand from the railroads.

For stock out of warehouse we quote: Soft steel bars, 3.15c. per lb.; iron bars, 3.15c.; structural shapes, 3.25c.; tank plates, 3.25c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, cold rolled, one pass, 4.60c.; galvanized sheets, No. 28, 5.70c.; black corrugated sheets, 4.65c.; galvanized, 5.75c.; cold-rolled rounds, shafting and screw stock, 3.75c.; structural rivets, 3.65c.; boiler rivets, 3.85c.; tank rivets, $\frac{1}{2}$ -in. diameter and smaller, 70 per cent off list; machine bolts, 55 per cent; carriage bolts, 50 and 5 per cent; lag screws, 55 $\frac{1}{2}$ per cent; hot-pressed nuts, square, \$3.25 off list; hexagon, blank or tapped, \$3.75 off list.

Old Material.—The market for old material continues extremely dull. Steel angle bars are down \$1 a ton, and there has been a 50c. decline in frogs, switches and guards. The rest of the list is unchanged, but weak. Consumers say they are waiting for orders before they buy old material. Railroad lists include: Chicago & Eastern Illinois, 1000 tons; Missouri Pacific, 5500 tons; St. Louis-San Francisco, 800 tons; Missouri-Kansas-Texas, 1800 tons; Chicago & Alton, 2000 tons; Northern Pacific, 3000 tons; Kansas City Southern, 700 tons, and Pullman Co., St. Louis, 200 tons.

We quote dealers' prices f.o.b. consumers' works. St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton

Iron rails	\$13.00 to \$13.50
Rails for rolling	16.00 to 16.50
Steel rails less than 3 ft.	17.00 to 17.50
Relaying rails, 60 lb. and under	24.00 to 25.00
Relaying rails, 70 lb. and over	30.00 to 31.00
Cast iron car wheels	17.25 to 17.75
Heavy melting steel	14.00 to 14.50
Heavy shoveling steel	14.00 to 14.50
Frogs, switches and guards cut apart	15.00 to 15.50
Railroad springs	17.25 to 17.75
Heavy axle and tire turnings	11.00 to 11.50
No. 1 locomotive tires	16.50 to 17.00

Per Net Ton

Steel angle bars	12.50 to 13.00
Steel car axles	17.75 to 18.25
Iron car axles	22.50 to 23.00
Wrought iron bars and transoms	19.50 to 20.00
No. 1 railroad wrought	11.50 to 12.00
No. 2 railroad wrought	12.50 to 13.00
Cast iron borings	9.50 to 10.00
No. 1 busheling	10.50 to 11.00
No. 1 railroad cast	14.75 to 15.25
No. 1 machinery cast	16.50 to 17.00
Railroad malleable	13.50 to 14.00
Machine shop turnings	6.75 to 7.25
Bundled sheets	7.50 to 8.00

Rolled Steel.—Additional rolls at the sheet mill of the Tennessee Coal, Iron & Railroad Co. have made greater output possible. All open-hearth furnaces in shape are in operation in this district, and finishing mills are running at a steady pace. Demand is strong, new business coming from all portions of the Birmingham territory. Soft steel bars are quoted at 2.15c. to 2.25c., base Birmingham; structural shapes at 2.05c. to 2.15c., and plates, 1.95c. to 2.05c.

Cast Iron Pipe.—New lettings are adding considerably to the tonnage now on hand for delivery during the second quarter of the year. The reduction in prices to \$40, base Birmingham, for 6-in. and larger sizes has brought out no extraordinary business, although it recognized competitive conditions. Much Alabama pipe is moving toward the far West. Centrifugal pipe is finding a ready market, with two plants producing this class of product. The American Cast Iron Pipe Co. will begin making sand-spun pipe in May.

Coke.—Production of by-product coke shows no recession, and shipments are still going forward steadily. Prices have declined to \$5.50 per ton, Birmingham, though spot business has been done at \$6. Shipments of coke into the Chicago and Detroit districts are still good.

Old Material.—Considerable scrap is moving, but it consists largely of shipments against old orders. New business is light, and prices are just holding their own. Lower quotations would stir up little business, it is said. Outstanding contracts still call for much tonnage. No change in prices is noted for the week.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical	\$15.00 to \$16.00
Heavy melting steel	13.00 to 14.00
Railroad wrought	12.00 to 13.00
Steel axles	19.00 to 20.00
Iron axles	18.00 to 19.00
Steel rails	14.00 to 14.50
No. 1 cast	17.00 to 17.50
Tramcar wheels	17.00 to 17.50
Car wheels	16.00 to 16.50
Stove plate	14.00 to 14.50
Machine shop turnings	8.00 to 8.50
Cast iron borings	8.00 to 9.00
Rails for rolling	15.00 to 16.00

Birmingham

Blast Furnaces Accumulate Second Quarter Bookings

BIRMINGHAM, March 9.—Alabama furnace interests are holding to \$22, Birmingham, for No. 2 foundry, and are asking \$23 on what little spot business is being done and for small tonnages for second quarter shipment. Sales for delivery during the second quarter already represent a substantial portion of the probable output. Local consumers are pressing for deliveries, and melt shows further improvement. There is but a small amount of foundry iron on furnace yards, in some grades very little. No effort is being made to obtain spot business. An accident at No. 1 blast furnace of the Woodward Iron Co. the latter part of the week, caused by the blowing out of a tuyere, resulted in the death of two men, but quick repairs were made and little tonnage was lost through the interruption. Fourteen Alabama blast furnaces are making foundry iron. The basic iron being made is needed by the companies producing it, very little, if any, of this product leaving the State. Transportation service is good.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil...	\$22.00
No. 1 foundry, 2.25 to 2.75 sil...	22.50
Basic	22.00
Charcoal, warm blast	\$30.00 to 32.00

Boston

Foreign Pig Iron Dominates Market—February Imports Heavy

BOSTON, March 9.—Foreign pig iron dominates the market. Prices at which it is offered are so much lower than those quoted on domestic brands that buyers evince little interest in the latter. Foundries, heretofore greatly averse to buying foreign stock, show no compunction about doing so today. Purchases by some of the largest melters have been heavy. The Worthington Pump & Machinery Co. is reported to have bought close to 1000 tons of Continental iron, a Providence, R. I., plant 2000 tons of Continental, and a Massachusetts foundry 450 tons of Dutch and 150 tons of English, while the aggregate of smaller transactions the past week run up into four figures. Some of the foreign iron wanted for second quarter will be delivered this month, but will be billed out in the second quarter. German No. 2X foundry has been sold at \$20.50 and \$21, on dock duty paid, and No. 1X at \$21.50. No. 2X now is generally quoted at \$21. Other foreign irons have been sold on an equivalent basis, but it is believed that most of the distress lots are cleaned up. A Springfield, Mass., foundry on March 10 will close on 2000 tons of No. 2X for March, April and May delivery. Another Springfield plant has not yet covered on 500 tons of No. 1X and 200 tons of No. 2X, and a Vermont inquiry for 1000 tons of No. 2X is still open. Smaller

pending lots include 300 tons of malleable wanted by a Laconia, N. H., foundry.

We quote delivered prices on the basis of the latest sales as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia, and \$9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25.....	\$25.65 to \$26.15
East. Penn., sil. 2.25 to 2.75.....	26.15 to 26.65
Buffalo, sil. 1.75 to 2.25.....	25.91
Buffalo, sil. 2.25 to 2.75.....	26.41
Virginia, sil. 1.75 to 2.25.....	29.92
Virginia, sil. 2.25 to 2.75.....	30.42
Alabama, sil. 1.75 to 2.25.....	\$31.60 to 32.60
Alabama, sil. 2.25 to 2.75.....	32.10 to 33.10

Coke.—New England made by-product foundry coke remains at \$13 a ton, delivered. Specifications against first half contracts, as during early February, show a tendency to fall off. Connellsville foundry coke is \$10.55 to \$11.05, delivered in New England, or \$1.95 to \$2.45 less than local fuel; yet there are few takers. New England ovens are still behind on domestic coke deliveries. Coke imports in February totaled 8221 tons. Since last summer, when importations began in consequence of the anthracite strike, 45,602 tons of foreign coke have been received at this port. February imports of hard coal, largely Welsh anthracite, were 63,031 tons, bringing the aggregate since last July up to 187,536 tons. More cargoes of foreign coal are expected this month, but it is doubtful if coke will be received.

Warehouse Business.—The movement of heavier material out of stock is increasing now that recent heavy snows have practically disappeared. Business is not up to the standard of January, however. The demand for lighter materials, on the other hand, is active, particularly for wire nails. Warehouse stocks are well assorted but not heavy. The ability of steel mills to make prompt shipments tends to check buying from warehouses.

Warehouse prices on finished material follow:

Steel.—Soft bars, \$3.265 per 100 lb.; flats, \$4.15; plain concrete bars, \$3.265; deformed concrete bars, \$3.265 to \$3.54; angles under 3-in., \$3.265; tees and zees, \$3.415; structurals, angles and beams, \$3.365; plates, 1/4-in. and heavier, \$3.365; 3/4-in., \$3.565; tire steel, \$4.50 to \$4.75; open-hearth spring steel, \$5 to \$10; crucible spring steel, \$12; bands, \$4.015 to \$5; hoop steel, \$5.50 to \$6; cold rolled, rounds and hexagons, \$3.95; squares and flats, \$4.45; toe calk steel, \$6.

Iron.—Refined bars, \$3.265 per 100 lb.; best refined, \$4.60; Wayne, \$5.50; Norway, rounds, \$6.60; squares and flats, \$7.10.

Old Material.—Light buying against Pittsburgh district mill orders has given a somewhat better undertone to the market. Business is still spotty, however, and prices on certain grades take an usually wide spread. Chemical borings are a case in point. Sales are reported at \$11, \$11.50 and up to \$12.10, but \$11 to \$11.50 presumably represents the most common range of quotations. Some firms quote such material as forged scrap, bundled skeleton and flashings at \$10. Others report purchases at \$8.60. Heavy melting steel is moving mostly at \$11 to \$11.50, but purchases were made the past week at \$10.60. A larger inquiry for machinery cast from New England foundries is noted, but actual purchases are few and far between.

The following prices are for gross-ton lots delivered consuming points:

Textile cast	\$19.00 to \$19.50
No. 1 machinery cast.....	18.50 to 19.00
No. 2 machinery cast.....	14.00 to 15.00
Stove plate	14.00 to 14.50
Railroad malleable	19.00 to 19.50

The following prices are offered per gross-ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$11.00 to \$11.50
No. 1 railroad wrought.....	13.00 to 13.50
No. 1 yard wrought.....	12.00 to 12.50
Wrought pipe (1 in. in diameter, over 2 ft. long).....	11.00 to 11.25
Machine shop turnings.....	8.50 to 9.00
Cast iron borings, chemical.....	11.00 to 11.50
Cast iron borings, rolling mill.....	8.50 to 9.00
Blast furnace borings and turnings.....	8.00 to 8.50
Forged scrap	9.00 to 9.50
Bundled skeleton, long.....	9.00 to 9.50
Forged flashings	9.00 to 9.50
Bundled cotton ties, long.....	8.50 to 9.00
Bundled cotton ties, short.....	9.50 to 10.00
Shafting	17.00 to 17.25
Street car axles.....	17.00 to 17.25
Rails for rerolling.....	12.50 to 13.00
Scrap rails	11.00 to 11.50

Pig Iron Imports.—Imports of pig iron at this port in February were more than twice as heavy as those for January. Germany maintains first place in shipments,

as it has since November, last. February importations totaled 10,659 tons, of which 4304 tons were German, 1725 tons Indian, 1105 tons Belgian, and 3525 tons presumably Dutch. Some of the Dutch shipments may have originated in Germany and Belgium. Ship manifests fail, in some instances, to disclose the original point of shipment. The 10,659 tons received in February compares with 4061 tons in January and 13,701 tons in February, 1925. Importations so far this month consist of 753 tons of Indian and 1664 tons of Continental iron.

Cincinnati

More Interest in Pig Iron—Steel Specifications Held Up

CINCINNATI, March 9.—The appearance of inquiries totaling 8000 tons has revived interest in the pig iron market. While buyers are still inclined to adhere to a waiting policy, it is evident that several consumers wish to canvass the situation to see if they can purchase to advantage at present. Developments in the next week are expected to clarify conditions in the Ironton district where foundry iron is now selling at \$21, base Ironton. Furnaces are consistently adhering to that price, even though there is some resale iron available at \$20.50. Whether producers will be able to maintain their present schedule or will accept 50c. less for second quarter, will probably be determined in the immediate future. Demand for Tennessee iron, which is quoted at \$21.50, base Birmingham, is negligible. Alabama furnaces are asking \$22, base Birmingham, but are unable to book business in this territory at that figure which, in terms of delivered prices, is considerably higher than southern Ohio iron. Consumers are manifesting greater interest in Jackson County silvery iron, about 500 tons of it having been sold in the past week. Malleable iron can be obtained at \$20.50 to \$21, furnace, and small lots have been taken by nearby melters. An Anderson, Ind., consumer has bought 600 tons of malleable, while a Columbus, Ohio, melter has purchased 350 tons of foundry from an Ironton producer. The Muncie Malleable Iron Co. is inquiring for 3000 tons of malleable for second quarter. Two consumers are in the market for 2000 tons of foundry iron each.

Based on freight rates of \$3.69 from Birmingham and \$1.89 from Ironton, we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25 (base).....	\$25.69
Alabama fdy., sil. 2.25 to 2.75.....	26.19
Tennessee fdy., sil. 1.75 to 2.25.....	25.19
Southern Ohio silvery, 8 per cent.....	32.39
So. Ohio fdy., sil. 1.75 to 2.25.....	22.89
So. Ohio, malleable (nominal).....	\$22.39 to 22.89

Finished Material.—Specifications and orders have been only fair, and there is little prospect for an increase in demand in the immediate future. Consumers are reluctant to purchase any material aside from immediate requirements. Many customers have held up specifications to such an extent that it will be impossible for them to take their full contract requirements this quarter. Several Eastern producers have begun the solicitation of business for next quarter, but buyers are hesitant about anticipating their forward needs, especially when mills are making comparatively prompt deliveries and there is no fear of an advance in prices. Bars are bringing 2c., base Pittsburgh. At least one seller is attempting to secure 2.10c. on small lots for second quarter, but without success. Plates are not available at less than 1.85c., base Pittsburgh. The volume of structural shape business has been small, and there has been no opportunity to test prices, which range from 1.90c. to 2c., base Pittsburgh. Irregularities have cropped out in black sheets, with one or two small producers accepting business at 3.25c., base Pittsburgh. The bulk of current tonnage, however, is commanding 3.35c. Galvanized sheets are less firm and are quoted at 4.50c. to 4.60c., base Pittsburgh. Reports of sales of blue annealed at 2.40c., base Pittsburgh, have been circulated locally, but 2.50c. better represents the market. The volume of business in wire goods shows improvement. In the next ten days the

Belfont Steel & Wire Co., Ironton, Ohio, will ship a barge of nails to four local jobbers. Common wire nails are bringing \$2.65 per keg, Pittsburgh or Ironton, and plain wire \$2.50 per 100 lbs., Pittsburgh or Ironton. A scarcity of new jobs has affected the operations of local fabricators who have been compelled to cut down their production schedules.

Reinforcing Bars.—Fresh inquiries have been far less than mills had expected, and lettings have been restricted to tonnages ranging from 25 to 75 tons. Consequently, the market is dull and prices are weak, with new billet bars quoted at 2c., Cleveland, and rail steel bars at 1.90c., mill.

Warehouse Business.—There has been a slight increase in sales, but business is below normal for this time of the year. The lack of activity is attributed to the bad weather and the fact that most mills are in a position to make prompt deliveries. Quotations are firm.

Cincinnati jobbers quote: Iron and steel bars, 3.30c. per lb.; reinforcing bars, 3.30c.; hoops, 4c. to 4.25c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds and hexagons, 3.85c.; squares, 4.35c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, 4.10c. to 4.30c.; No. 28 galvanized sheets, 5.25c. to 5.40c.; No. 9 annealed wire, \$3 per 100 lb.; common wire nails, \$2.95 per keg base; cement coated nails, \$2.25 per keg; chain, \$7.55 per 100 lb. base; large round head rivets, \$3.75 base; small rivets, 65 per cent off list. Boiler tubes, prices net per 100 ft., lap-welded steel tubes, 2-in., \$18; 4-in., \$38; seamless, 2-in., \$19; 4-in., \$39.

Coke.—Specifications for by-product foundry coke have been liberal, but the demand for beehive coke has receded sharply. Wise County foundry grades are being offered at \$4.75 to \$5.50, ovens, and furnace coke from that territory is selling as low as \$4, ovens. Sales of New River grades have been restricted to lots ranging from single carloads to 200 tons. Considerable Alabama coke is moving into the Louisville market. The call for domestic coke is still heavy, but dealers anticipate a big decrease within two weeks.

Based on freight rates of \$2.14 from Ashland, Ky., \$3.53 from Connellsville, and \$2.59 from Wise County ovens and New River ovens, we quote f.o.b. Cincinnati: Connellsville foundry, \$8.03 to \$9.03; Wise County foundry, \$7.34 to \$8.59; New River foundry, \$9.59 to \$10.09; by-product foundry, \$10.64.

Old Material.—The market is devoid of any outstanding activity. The suspension of shipments to the Ashland, Ky., works of the American Rolling Mill Co. for a period of at least two weeks has had a weakening effect upon the local situation. The only bright spot is the improved demand from foundries. Prices have not changed, but so many items have been stagnant that quotations on them are merely nominal. The Louisville & Nashville has a list totaling about 6000 tons, including 2525 tons of No. 1 scrap steel rails, which closes March 10. The Norfolk & Western is offering about 4800 tons this week, while the Southern is taking bids on 8500 tons, including 860 tons of No. 3 rail steel scrap and 670 tons of structural steel.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel.....	\$13.00
Scrap rails for melting.....	\$13.00 to 13.50
Short rails	18.00 to 18.50
Relaying rails	27.00 to 27.50
Rails for rolling.....	14.00 to 14.50
Old car wheels.....	12.50 to 13.00
No. 1 locomotive tires.....	16.50 to 17.00
Railroad malleable.....	15.50 to 16.00
Agricultural malleable.....	14.50 to 15.00
Loose sheet clippings.....	8.00 to 9.00
Champion bundled sheets.....	10.00 to 10.50
Per Net Ton	
Cast iron borings.....	8.00 to 8.50
Machine shop turnings.....	7.00 to 7.50
No. 1 machinery cast.....	19.00 to 19.50
No. 1 railroad cast.....	14.50 to 15.00
Iron axles	22.00 to 22.50
No. 1 railroad wrought.....	10.00 to 10.50
Pipes and flues.....	8.50 to 9.00
No. 1 busheling.....	9.50 to 10.00
Mixed busheling.....	8.00 to 8.50
Burnt cast	8.50 to 9.00
Stove plate	9.50 to 10.00
Brake shoes	10.00 to 10.50

The date of the public sale of the Bath Iron Works, Inc., at Bath, Me., has been changed to April 6. The auctioneer, Industrial Plants Corporation, 25 Church Street, New York, is preparing an illustrated catalog.

Buffalo

Heavy Pig Iron Specifications—Scrap Inactive and Weak

BUFFALO, March 9.—Pig iron inquiry is less active than a week ago but the market remains steady. Prices are unchanged with nothing being sold under \$21, base Buffalo. One interest continues to quote \$22 for prompt delivery and \$21 for second quarter. Another reports the sale of some small scattered lots at \$22 for the second quarter. The Massey-Harris Harvester Co., Batavia, N. Y., has not yet closed for 2000 tons of foundry and malleable. The General Electric Co. is reported to have placed 2000 tons, though this is not confirmed. An encouraging feature is the heavy specifications against old orders. With one interest these have been so extensive that it is running behind and will have to carry tonnage over into April. A Buffalo foundry wants 300 to 400 tons of foundry iron for delivery up to July 1; this business will probably be closed during this week.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

No. 2 plain fdry., sil. 1.75 to 2.25	\$21.00
No. 2X foundry, sil. 2.25 to 2.75..	21.50
No. 1 foundry, sil. 2.75 to 3.25...	22.50
Malleable, sil. up to 2.25.....	21.00
Basic	\$20.50 to 21.00
Lake Superior charcoal	29.28

Finished Iron and Steel.—Inquiry is beginning to come out for second quarter contracts. The price of 2.265c., Buffalo, on bars is being continued for second quarter. On some individual carload lots 2.365c. is being asked, but buying is not heavy. Sheet demand is said to be picking up again after a lull, and black is being quoted as 3.35c., base Pittsburgh, though as low as 3.20c. is said to have been done a short time ago. One sheet inquiry out now is for 200 tons of black, and another is for 300 tons of black. Pipe specifications are fairly good and prices of oil country pipe are stiffening. Bolt and nut prices will probably be the same the second quarter as the first. Specifications are good. Some sizable reinforcing bar business is due to be placed very soon, one inquiry being for 1200 tons.

Warehouse prices are being quoted as follows: Steel bars, 3.30c. per lb.; steel shapes, 3.40c.; steel plates, 3.40c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, 4.60c.; No. 28 galvanized, 5.75c.; cold-rolled shapes, 4.45c.; cold-rolled rounds, 3.95c.; wire nails, 3.90c.; black wire, 3.90c.

Old Material.—The market is very dull, with almost a total absence of buying. One large mill which has been picking up small lots of heavy melting steel at \$15, is not even interested at this figure now and expects the market to go lower. Railroad lists which closed last week brought lower prices than have appeared in this district in months. One list is said to have brought \$16.75, Youngstown, for melting steel. Stove plate is practically the only strong commodity in the market, there being a scarcity of this material in the face of a pronounced demand from two consuming interests. When the weather moderates, a larger production of scrap, including stove plate, is expected.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel	\$15.00 to \$15.50
Low phosphorus	18.50 to 19.00
No. 1 railroad wrought	14.00 to 14.50
Car wheels	17.00 to 17.50
Machine shop turnings.....	11.00 to 11.50
Mixed borings and turnings.....	12.00 to 12.50
Cast iron borings	12.00 to 12.50
No. 1 busheling	14.00 to 14.50
Stove plate	15.00 to 15.25
Grate bars	13.00 to 13.50
Hand-bundled sheets	11.00 to 11.50
Hydraulic compressed	14.00 to 14.50
No. 1 machinery cast	15.50 to 16.00
Railroad malleable.....	18.50 to 19.00
No. 1 cast scrap	17.00 to 17.50
Iron axles	24.00 to 25.00
Steel axles	16.00 to 16.50

Structural Mill for Colorado Company

The Colorado Fuel & Iron Co. will install a 28-in. structural mill at Pueblo, Colo. The order for the mill, complete with all auxiliary equipment except the drives, has been placed with the Morgan Engineering Co., Alliance, Ohio.

New York

Pig Iron Market Hinges on Foreign Prices —Ferromanganese Declines to \$100

NEW YORK, March 9.—The course of the pig iron market on the Atlantic seaboard appears to depend largely on what happens to prices on foreign material. The decline in furnace coke to \$3, Connellsville, is interpreted by melters as an augury for still lower prices on domestic iron. Recent distress offerings of foreign metal have also proved a depressing factor. On the other hand, a large proportion of this bargain iron is said to have been disposed of by importers, and reports from abroad indicate that foreign producers have advanced their prices. If this proves to be a fact, domestic furnaces may succeed in maintaining a stable market. One source of encouragement is that melt is generally well sustained and in some directions promises to expand. Railroad equipment manufacturers, especially, are increasing their operations and are expected to be heavier users of iron. Owing to the uncertainty of the market, buyers continue to postpone their second quarter purchases. A fair number of inquiries are current, however, a number of them apparently to test out prices, and in some instances round tonnages have been placed for early shipment. Buying has been most active in New England, where melters have taken advantage of the low prices available on imported material. Foreign metal is available at all the way from \$20.50 to \$22, duty paid port of entry, with silicon differentials waived. The General Electric Co. has closed for 800 tons of foreign iron for Everett and Lynn, Mass., and the General Fire Extinguisher Co., Providence, R. I., has bought 2000 tons, also imported metal. The Baird Machine Co., Bridgeport, Conn., has closed for 500 tons of foreign material. The Westinghouse Electric & Mfg. Co. is reported to have placed 1000 tons for Springfield, Mass. The Gilbert & Barker Mfg. Co., Springfield, Mass., is in the market for 2000 tons of No. 2X foundry for March and April shipment. The Richardson & Boynton Co. is inquiring for 800 tons of No. 2X foundry for the same delivery to its Dover, N. J., plant. A Berwick, Pa., plant is asking for prices on 300 tons of iron. The new Troy, N. Y., blast furnace is expected to be blown in between March 12 and 15.

We quote per gross ton delivered in the New York district as follows, having added to furnace prices \$2.52 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.54 from Virginia:

East. Pa. No. 2 fdy., sil. 1.75 to 2.25	\$24.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	25.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	25.52
Buffalo fdy., sil. 1.75 to 2.25	25.91
No. 2 Virginia fdy., sil. 1.75 to 2.25	29.54

Ferroalloys.—Sharp reductions have been made in ferromanganese. E. J. Lavino & Co., Philadelphia, which makes the blast furnace product in Virginia and Pennsylvania and the Electro Metallurgical Corporation, New York, which produces the electric furnace product in Norway and Canada, have reduced prices \$15 per ton to \$100, seaboard basis. On March 8, the British producers reduced their price to \$110, seaboard. Germany alloy is on the same basis. The reductions have come in the wake of the heavy sales by a large domestic steel company late in 1925, as reported in these columns, and at prices below those then prevailing. On the basis of \$100, seaboard, fairly good sales have been made this month and in the past week probably 1000 tons, mostly in carload and small lots, has been disposed of. Business in spiegeleisen is only moderate, but specifications on contract are heavy. There is no special new demand for 50 per cent ferrosilicon or standard ferrochromium, but specifications are heavy.

Finished Steel.—Demand for some rolled steel products has shown a moderate increase, but as a whole the local steel market has shown no important change as to volume. There has been a slight improvement in structural steel lettings and considerable work is in

prospect, but this is a seasonal gain that is to be expected. Figures kept by the Structural Steel Board of Trade of New York, embracing most of the important fabricators in the metropolitan district, show that February contracts totaled only about 11,000 tons as compared with 18,000 tons in the same month last year. Interest in the trade centers on second quarter contracting, which as yet has made no appreciable headway. As a counter-effect to the expectations of some buyers that finished steel prices for that period might be slightly lower, some of the mills both in Pittsburgh and in the East have decided on higher figures for the next quarter. One or more Pittsburgh mills have named 1.90c. to 2c. on plates, 1.90c. to 2c. on shapes and 2 to 2.10c. on bars, while on bands there has been an advance to a range of 2.50c. to 2.60c., the prevailing prices being 2.40c. to 2.50c. One of the Eastern plate mills has named 1.90c. as its second quarter contract price, with 1.80c. on deliveries running through the remainder of this month, and other Eastern mills are likely to follow suit this week. Just how strongly these advances may hold in the face of the present demand for steel remains to be seen. Some of the announcements which have been sent to district selling offices display quite a determined stand on the part of general sales departments and the test will come within the next two or three weeks. There has been no outstanding business in any lines related to steel except for the orders of the Southern Railway totaling 115 locomotives and 2250 cars. The Pennsylvania is out with a large inquiry for cars and locomotives, but as the purchase has not yet been authorized the request for bids is merely preliminary.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. to 2.44c. per lb.; plates, 2.14c.; structural shapes, 2.24c. to 2.34c.; bar iron, 2.24c.

Warehouse Business.—Spring purchasing seems slow in developing, although there has been a slight improvement in the volume of inquiry in the past few days. The larger dealers handling galvanized sheets have advanced quotations to a basis of 5.65c. per lb., but the 5.50c. per lb. price continues in some quarters. Demand for structural steel out of stock has not increased beyond the small scale purchases of the past several weeks. Non-ferrous metals are fairly steady with the exception of lead, which has developed some weakness. Prices on page 752. We quote boiler tubes per 100 ft. as follows:

Lap welded steel tubes, 2-in., \$17.33; seamless steel, 2-in., \$20.24; charcoal iron, 2-in., \$25; 4-in., \$67.

Cast Iron Pipe.—Moderate activity continues and prices are unchanged. The City of New York opened bids March 2 on about 6000 tons of 6, 8 and 12-in. pipe and fittings. The low bidders on various sections were the Warren Foundry & Pipe Co. on about 2200 tons of 8 and 12-in., the Donaldson Iron Co. on about 800 tons of 6 and 8-in. and R. D. Wood & Co. on about 2800 tons of 6 and 8-in. Morristown, N. J., opened bids last week on several hundred tons of water pipe, and the low bidder was the Pont-a-Mousson works, with the Gelsenkirchen Bergwerks next. Soil pipe continues quiet and unchanged.

We quote pressure pipe per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, \$50.60 to \$52.60; 4-in. and 5-in., \$55.60 to \$57.60; 3-in., \$65.60 to \$67.60; with \$5 additional for Class A and gas pipe. Discounts both of Northern and of Southern makers of soil pipe, f.o.b. New York, are as follows: 6-in., 40 to 40% per cent off list; heavy, 50 to 50% per cent off list.

Coke.—A fair volume of inquiry for foundry coke is reported and for prompt shipment the market is quotable at \$4.75 to \$5.50 per ton. On contracts the range is generally \$5.25 to \$5.50 per ton, one maker's contract price being \$5.50 per ton for second quarter or \$5.25 for second and third quarter. About 1200 cars of domestic coke are reported on tracks in New Jersey and several hundred on Long Island. By-product continues unchanged at \$11.52, delivered Newark or Jersey City, N. J.

Old Material.—The market continues weak throughout, with \$16 per ton, the maximum buying price on No. 1 heavy melting steel, delivered eastern Pennsylvania, and with \$15.50 per ton more nearly represen-

tative of the market. The lower price is generally quoted for shipment to either Bethlehem or Conshohocken, Pa. Machine shop turnings and bundled sheets are still being purchased in moderate volume at \$13.50 per ton, delivered to a consumer with a \$3.53 per ton freight rate, while as low as \$13 per ton is offered for turnings delivered to a consumer on a \$3.78 per ton freight rate. Stove plate for eastern Pennsylvania steel mills continues at \$13.50 and \$14 per ton, delivered, the price depending upon the freight rate. Heavy breakable cast is still being purchased at \$17.50 per ton, delivered to a New Jersey foundry with a \$2.91 freight rate, but delivered to a Harrisburg consumer, brokers are offering only \$16 per ton and occasionally \$16.50 per ton. The improvement in weather conditions has expedited shipments on contracts, so that there is evidently only a small tonnage of the higher priced material still to be shipped on old commitments.

Buying prices per gross ton, New York, follow:

Heavy melting steel (yard).....	\$10.50 to \$11.00
Heavy melting steel (railroad or equivalent).....	12.00 to 12.75
Rails for rolling.....	12.75 to 13.00
Relaying rails, nominal.....	23.00 to 24.00
Steel car axles.....	19.50 to 20.00
Iron car axles.....	23.50 to 24.00
No. 1 railroad wrought.....	13.50 to 14.00
Forge fire.....	10.50 to 11.00
No. 1 yard wrought, long.....	12.50 to 13.00
Cast borings (steel mill).....	9.75 to 10.25
Cast borings (chemical).....	14.00 to 14.50
Machine shop turnings.....	9.25 to 10.25
Mixed borings and turnings.....	10.00 to 10.25
Iron and steel pipe (1 in. diam., not under 2 ft. long).....	11.75 to 12.25
Stove plate (steel mill).....	10.00 to 10.50
Stove plate (foundry).....	11.25 to 11.75
Locomotive grate bars.....	11.25 to 11.75
Malleable cast (railroad).....	16.00 to 16.50
Cast iron car wheels.....	13.50 to 14.00
No. 1 heavy breakable cast.....	12.50 to 14.50

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast.....	\$17.00 to \$17.50
No. 1 heavy cast (columns, building material, etc.), cupola size.....	15.50 to 16.00
No. 2 cast (radiators, cast boilers, etc.).....	14.50 to 15.00

Cleveland

Pig Iron Declines 50c.—Fluorspar Advances—Plates Show Firmer Tendency

CLEVELAND, March 9.—The demand for finished steel shows little change in volume. Consumers as a rule are specifying for about all the material due on first quarter contracts, and not much interest is being shown in second quarter contracts, although several mills have opened their books at the current prices for that delivery on steel bars, plates and structural material. New buying is confined largely to small lots. Orders from the automobile industry have improved over a month ago, but motor car builders are not specifying very far ahead. Plates show a firmer tendency, which appears to be the only change in the price situation. Most of the mills are now holding firmly to 1.90c., base Pittsburgh, although 1.85c. has not entirely disappeared. Structural material ranges from 1.90c. to 2c., Pittsburgh. Steel bars are well maintained at 2c., Pittsburgh, with some of the mills making an effort to get \$2 more for small lots. The outlook in the building field is fairly good. As was indicated last week, the formal award of 20,000 tons of structural material for the lower building of the Union Terminals Co., Cleveland, has been made to the American Bridge Co. The terminals company has withdrawn its inquiry for 2500 tons for the Eagle Avenue bridge and will revise plans.

Pig Iron.—The market shows a little more life than for some time, both in orders and inquiries. While prices in this territory have not been fully tested, some round lots of foundry iron for the second quarter placed during the week brought out concessions from recent quotations both by Valley district and Cleveland producers. Orders that were taken at shaded prices include 2000 tons placed by a Cleveland foundry and 500 tons purchased by a nearby consumer, the most of this going to a Cleveland producer. In the Valley district

foundry iron was sold in small lots at \$20, a 50c. reduction, but it is possible that this concession has been made only on brokers' iron. In Michigan the price has settled down to \$22, furnace, as compared with \$22.50, at which some business was taken a week ago. With Ironton district iron selling at \$21, furnace, Lake iron at \$22, furnace, is \$1 a ton too high for business at competitive points in western Ohio and Indiana. Two leading local interests report sales aggregating 14,000 tons during the week, mostly for the second quarter. Some of the large producers are beginning to show interest in the market, and a more active buying movement is expected shortly. A Canton, Ohio, consumer is inquiring for 3000 tons, the Muncie Malleable Iron Co., Muncie, Ind., for 3000 tons, and the Gilbert & Barker Mfg. Co., Springfield, Mass., for 2000 tons. We note the sale of 200 tons of basic iron at \$20.

In line with the weakening tendency of the market, one Cleveland producer has reduced its price 50c. a ton to \$21.50, furnace, on foundry and malleable iron for Cleveland delivery, but is still asking \$20.50 for outside shipment, although it is finding it difficult to obtain this price in view of an increasing amount of Valley iron offered at \$20.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a \$3.02 freight rate from Jackson and \$6.01 from Birmingham:

Basic, Valley furnace.....	\$20.00
N't'n No. 2 fdy., sil. 1.75 to 2.25.....	\$21.76 to 22.00
Southern fdy., sil. 1.75 to 2.25.....	28.01
Malleable.....	21.76 to 22.00
Ohio silvery, 8 per cent.....	33.52
Standard low phos., Valley furnace.....	27.50 to 28.00

Iron Ore.—A few inquiries for merchant ore, in addition to that of the Ford Motor Co., have come from consumers who are expected to buy as soon as prices are announced, but no sales have been made and it seems doubtful if prices are named before around April 1. A report from Duluth Monday that prices had been established at a 25c. a ton advance aroused considerable interest until it proved to be unfounded.

Ore shipments from lower Lake docks during February amounted to 553,511 tons, as compared with 703,185 tons during the corresponding month a year ago, according to monthly figures prepared by the Lake Superior Iron Ore Association. The dock balance on March 1 was 6,083,791 tons, as compared with 6,022,652 tons on March 1 last year.

Semi-Finished Steel.—Consumers are beginning to show some interest in semi-finished steel, and a few small lot contracts for the second quarter and orders for April requirements have been placed with a Cleveland mill at the present price of \$36, Youngstown, for sheet bars and \$35 for slabs. The disposition of leading producers is to hold to the present price on all forms of semi-finished steel for the second quarter.

Sheets.—Efforts to stiffen sheet prices do not appear to be meeting with much success except on blue annealed, which are fairly firm at 2.50c., base Pittsburgh. On black sheets, 3.25c. is rather common, although some of the mills are holding to 3.35c. Galvanized sheets are weak, with concessions of from \$2 to \$4 a ton from the quotation of 4.60c., Pittsburgh. New demand is moderate, and consumers are showing little interest in second quarter contracts.

Reinforcing Bars.—Building work requiring reinforcing bars is coming out very slowly, and inquiry is light. Rail steel bars are unchanged at 1.80c., mill.

Fluorspar.—Leading producers have advanced the price on gravel fluorspar 50c. to \$18 per ton, mines, and the market appears fairly well established at the advance, as a number of sales have been made at the higher price.

Bolts, Nuts and Rivets.—The demand for bolts and nuts on contracts continues good, with little change in the recent volume. Prices are firm. Rivet specifications are rather light. The leading local maker is adhering to the \$2.40 per 100 lb. for large rivets. A Pacific Coast shipyard has inquired for 200 tons.

Coke.—By-product plants are no longer finding any market in the East for coke, but are selling some for

shipment to Michigan and other points to the West. The market has settled down to \$6.50, ovens, for both stove and egg sizes. Foundry coke is unchanged at \$5.50 to \$6, ovens, for premium brands of Connellsville coke, some grades being quoted down to \$4.50.

Ferromanganese.—A \$5 a ton cut to \$110, seaboard, on foreign ferromanganese has been followed by a \$10 cut to \$100 on domestic material. Most consumers in this territory are covered with contracts, but some of these have been revised to meet the new price situation.

Warehouse Business.—For some time there has been considerable irregularity in prices on steel bars, plates and structural material out of stock. To bring about more uniformity in quotations, jobbers have placed the three items on the same 3c. basis. Heretofore structural material and plates out of stock have been nominally \$2 a ton higher than steel bars. The price of 3c. appears to be about the basis at which much of the business has been going recently.

Jobbers quote steel bars, 3c. per lb.; plates and structural shapes, 3c.; No. 28 black sheets, 4.10c.; No. 28 galvanized sheets, 5.25c.; No. 10 blue annealed sheets, 3.25c.; cold-rolled rounds and hexagons, 3.90c.; flats and squares, 4.40c.; hoops and bands, 3.85c.; No. 9 annealed wire, \$3 per 100 lb.; No. 9 galvanized wire, \$3.45 per 100 lb.; common wire nails, \$3 base per keg.

Old Material.—With an absence of demand and a tendency toward further weakness, there is no marked change in the scrap market. Heavy melting steel scrap was bought by a Valley mill during the week at the reported price of \$17. This grade has declined 50c. in the local market, small lot purchases being made at \$14.25 to \$14.50. Borings and turnings and busheling have declined 25c. There is virtually no demand from local mills, and dealers are buying little scrap, as they are well cleaned up on contracts. Some of the Detroit automobile scrap offered recently is reported to have gone directly to consumers.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel.....	\$14.25 to \$14.50
Rails for rolling.....	16.75 to 17.00
Rails under 3 ft.....	18.50 to 19.00
Low phosphorus melting.....	17.75 to 18.25
Cast iron borings.....	11.75 to 12.25
Machine shop turnings.....	11.00 to 11.50
Mixed borings and short turnings.....	11.75 to 12.25
Compressed sheet steel.....	13.25 to 13.50
Railroad wrought.....	13.75 to 14.25
Railroad malleable.....	20.00 to 20.50
Light bundled sheet stampings.....	11.75 to 12.00
Steel axle turnings.....	14.00 to 14.50
No. 1 cast.....	17.50 to 18.00
No. 1 busheling.....	11.75 to 12.00
Drop forge flashings.....	13.25 to 13.50
Railroad grate bars.....	13.25 to 13.50
Stove plate.....	13.25 to 13.50
Pipes and flues.....	11.50 to 12.00

Philadelphia

Foundry Pig Iron Price for Second Quarter Reduced to \$22, Furnace

PHILADELPHIA, March 9.—All of the eastern Pennsylvania district makers of foundry pig iron have reduced prices for second quarter to \$22, furnace, for No. 2 plain iron and to \$22.50 on No. 2X, with an additional 50c. for No. 1X. For small lots to be shipped over the remainder of this month, quotations range from \$22.50 to \$23, base, depending on the quantity. Basic iron is also slightly easier, with a sale at \$22.50, delivered, and quotations as low as \$22.25, delivered. Makers of ferromanganese, have dropped their price from \$115 to \$100. Agents of British ferromanganese makers have been notified of a reduction in the British price here from \$115 to \$110, seaboard, duty paid.

Some steel company offices report a moderate increase in the tonnage booked so far this month, compared with the February rate, but others detect no change. The inquiry of the Pennsylvania Railroad for 100 to 200 locomotives, 2000 freight cars and a number of passenger cars has brought a degree of encouragement, and another favorable development is the letting of contracts for the construction of the Conowingo power project on the Susquehanna River, near the Pennsylvania-Maryland border. This work will require about 5000 tons of concrete reinforcing bars and a like

tonnage of structural steel for the fabrication of 500 100-ft. towers. Inquiries for this material, however, may not come into the market for a month or more.

Pig Iron.—With second quarter contracting for foundry pig iron as an early possibility, makers of iron in the eastern Pennsylvania district have named a base price of \$22, furnace, for that delivery, with 50c. differentials for the higher silicon grades. They believe that these figures will meet the expectations of buyers and will also check the flood of cheap foreign iron, which has seriously affected the market in the past month or more. No important purchases for second quarter have been made, but two fairly large inquiries from the New York district are expected to be closed this week and indications are that each company will supply a part of its requirements from stocks of foreign iron. Imported foundry grades are still being offered at around \$20, Philadelphia, duty paid. Pig iron merchants and consumers have been circularized by a Belgian firm, which offers foundry iron of standard analysis at \$19, seaboard, for the grade running from 1.75 to 2.25 per cent silicon and at \$19.75 for the grade running 2.25 to 2.75 per cent silicon. With the 75c. duty and profits added, these prices, however, are believed to be too high to compete with the new eastern Pennsylvania furnace quotations. An Eastern steel company has bought 3000 tons of basic iron. The market price on this grade now ranges from \$22.25 to \$22.50, delivered.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.....	\$22.76 to \$23.63
East. Pa. No. 2X, 2.25 to 2.75 sil.....	23.26 to 24.13
East. Pa. No. 1X.....	23.76 to 24.63
Virginia No. 2 plain, 1.75 to 2.25 sil.....	27.67 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.....	28.17 to 29.17
Basic, delivered eastern Pa.....	22.25 to 22.50
Gray forge.....	22.50 to 23.00
Malleable.....	23.00 to 23.50
Standard low phos. (f.o.b. furnace).....	22.50 to 23.50
Copper bearing low phos. (f.o.b. furnace).....	23.50 to 24.00

Ferromanganese.—E. J. Lavino & Co. on Friday last, announced a reduction in the selling price of ferromanganese from \$115 to \$100, furnace, and this reduction has been met by the Bethlehem Steel Co., which is an active factor in the ferromanganese market, and the Electro Metallurgical Corporation. About two months ago a considerable quantity of ferromanganese, probably 30,000 to 40,000 tons, was quietly sold to leading consumers at a price said to have been about \$105, furnace, and since that time the demand has been exceedingly limited. The purpose of the present reduction was to stimulate new buying, which has developed only to a moderate extent. A reduction in the British price from \$115 to \$110, seaboard, is at best merely a formality, as the \$110 quotation probably will not result in any business. A further reduction of the British price, it is stated, would place it at such variance with the British home market price as to raise the issue of "dumping"; hence the British makers are expected to be no factor in this market in the immediate future.

Billets.—There is very little demand for billets. Prices remain unchanged at \$35, Pittsburgh, for re-rolling quality and at \$40 for forging quality.

Plates.—Oil companies have been larger buyers of plates in the past week, but the market as a whole does not show the activity of two or three weeks ago. The question of second quarter contracts is uppermost in the minds of the sellers, although buyers have as yet evidenced little interest. One mill in the East has already named 1.90c., Pittsburgh, as its second quarter price, and other mills are expected to advise their customers this week that this also will be their price. In a few instances buyers have indicated that they would prefer to buy for their requirements as needed rather than contract at an advance. Some mills are running from hand to mouth, having only a few days of work ahead, but incoming orders have been sufficient to maintain approximately the rate of operation in effect during the past month. The most important change is that quicker deliveries are to be had. About

4000 to 8000 tons of plates will be required for the 100 to 200 locomotives inquired for by the Pennsylvania Railroad, and the steel needed for 2000 freight cars will be 20,000 tons or more. The current price remains 1.80c., Pittsburgh.

Structural Material.—Very little fabricated steel work has been awarded in this district, and comparatively few projects are in the market for bids. The bulk of the current tonnage, both as to fabricated work and plain material, is in small lots. Some of the Eastern mills are anxious for orders, and prices have softened slightly. In the immediate Philadelphia district plain material is to be had at prices ranging from 1.80c. to 1.85c., Pittsburgh, the latter price applying on small tonnages.

Bars.—Some of the bar mills are quoting 2c., Pittsburgh, to preferred customers for second quarter and 2.10c., Pittsburgh, for users of small tonnages. This has had no effect on the attitude of buyers, who seem content to await further developments in the steel situation before covering their second quarter requirements. Foreign bars continue an important factor at seaboard points, sales having been made at as low as 1.70c., duty paid. Bar iron remains at 2.22c., Philadelphia.

Sheets.—Demand for sheets has fallen off somewhat, and the mills are getting more anxious for orders. Prices are holding fairly well, notwithstanding occasional concessions on galvanized and black sheets. Blue annealed seems to be firm at 2.50c., Pittsburgh.

Warehouse Business.—The volume of buying out of stock has been fairly good in the past week. Prices are unchanged.

Imports.—Pig iron imports at Philadelphia last week totaled 9200 tons, of which 4800 tons came from India, 3000 from Germany, 1150 from the Netherlands and 250 from Sweden. A shipment of steel bars from the Netherlands amounted to 1185 tons. Other imports, except for 3000 tons of chrome ore from Portuguese Africa, were negligible.

Old Material.—Evidence that scrap prices had reached figures at which it would be difficult for mills to buy large tonnages came within the week in an advance of 50c. a ton in the offers of a leading user of bundled sheets and turnings for steel works use. This consumer had been picking up small lots at \$13.50, but not sufficient for its requirements, and late last week made offers of \$14, which brought out the desired amounts. In some grades there have been further slight declines, but in the main the market is holding at last week's level. A steel mill has tried without success to buy heavy melting steel at \$15.50, but could undoubtedly pick up small tonnages at \$16. Several of the Eastern mills are expected to come into the market within the next week or two, and the belief of brokers is that prices will show an advance of 50c. to \$1 a ton, particularly on steel mill grades.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel.....	\$15.50 to \$16.00
Scrap rails	15.50 to 16.00
Steel rails for rolling	17.00 to 17.50
No. 1 low phos., heavy, 0.04 per cent and under.....	20.00 to 20.50
Couplers and knuckles.....	19.00 to 19.50
Rolled steel wheels.....	19.00 to 19.50
Cast iron car wheels.....	17.50 to 18.00
No. 1 railroad wrought.....	17.00 to 17.50
No. 1 yard wrought.....	16.50 to 17.00
No. 1 forge fire	14.50 to 15.00
Bundled sheets (for steel works)	14.00
Mixed borings and turnings (for blast furnace)	13.00 to 13.50
Machine shop turnings (for steel works)	14.00
Machine shop turnings (for rolling mill)	14.00 to 14.50
Heavy axle turnings (or equivalent)	15.00
Cast borings (for steel works and rolling mill)	14.00
Cast borings (for chemical plant)	15.50 to 16.00
No. 1 cast	17.50 to 18.00
Heavy breakable cast (for steel works)	16.00 to 16.50
Railroad grate bars	14.50
Stove plate (for steel works)	14.50
Wrought iron and soft steel pipes and tubes (new specifications)	15.50 to 16.00
Shafting	21.00 to 22.00
Steel axles	21.00 to 22.00

RAILROAD EQUIPMENT

Southern Buys 113 Locomotives and 2250 Cars— Pennsylvania Sends Out Inquiries

Orders of the Southern Railway for 113 locomotives and 2250 freight cars and inquiries from the Pennsylvania for 100 to 200 locomotives, 2000 steel automobile cars and 258 items of passenger equipment featured the week's railroad equipment market. A total of 4150 cars was bought, including 1100 for the Southern Pacific.

Freight cars in need of repair on Feb. 15 totaled 162,982, or 7 per cent of the number on line, according to the Car Service Division, American Railway Association. This was an increase of 4822 cars, compared with the number reported as of Feb. 1. It was, however, a decrease of 24,999 cars, compared with the same date last year. Locomotives in need of repair Feb. 15 totaled 10,682, or 16.9 per cent, an increase of 595, compared with the Feb. 1 report.

The principal equipment items of the week follow:

The St. Louis-San Francisco placed 750 underframes with the Tennessee Coal, Iron & Railroad Co.

The Colorado & Southern is in the market for 100 ballast cars.

The Missouri Pacific placed 600 box car bodies with an unnamed builder.

The Southern Railway has ordered 113 locomotives. The American Locomotive Co. will build 84 of the following types: 46 heavy Mikado, 23 heavy Pacific, 10 Consolidation and 5 light Mikado type. The Lima Locomotive Works will build 22 and the Baldwin Locomotive Works 7, also of similar types. The Southern Railway has also placed 1000 hopper cars with the Tennessee Coal, Iron & Railroad Co., 1000 box cars with the Mount Vernon Car Mfg. Co., and 250 ballast cars with the General American Car Co.

The Florida East Coast has ordered 23 heavy mountain type locomotives from the American Locomotive Co.

The Pennsylvania Railroad has entered the market for 100 to 200 locomotives, 2000 steel automobile cars, 125 baggage express cars, 74 coaches, 24 dining cars, 7 combination passenger and baggage cars, 8 cafe coaches and 20 electric coaches. Authority for the purchase of this equipment has not yet been given by the board of directors, hence the inquiries are merely preliminary.

The South African Railways & Harbors are inquiring for 23 mountain type, 20 Mikado type and 10 Pacific type locomotives.

The Akron, Canton & Youngstown has ordered two 8-wheel switching locomotives from the Lima Locomotive Works.

The Southern Pacific has ordered 1100 box cars and 28 passenger cars from the Pullman Car & Mfg. Corporation, 500 all-steel gondola cars from the Pressed Steel Car Co. and 6 passenger cars from the Standard Steel Car Co. The Southern Pacific has also ordered 7 locomotives from the Baldwin Locomotive Works, in addition to 23 placed with the American Locomotive Co., as reported last week.

The Chicago & North Western has given the Pressed Steel Car Co. an additional order for 250 steel underframes for cars.

The Northern Pacific has ordered 220 steel underframes for cars from the Siema-Stembel Co.

The Nashville, Chattanooga & St. Louis has ordered 75 50-ton flat cars, 125 55-ton hopper cars and 4 70-ft. baggage cars from the American Car & Foundry Co. and 100 ballast cars from the Rodger Ballast Car Co., which will also be built in the shops of the American Car & Foundry Co.

The Brooklyn-Manhattan Transit Lines have ordered 201 subway cars of the articulated type, three cars to each unit, from the Pressed Steel Car Co.

W. J. Willis, vice-president, and S. H. Bunnell, consulting engineer, American Bosshardt Furnace Corporation, New York, will be the speakers at the regular monthly dinner and meeting of the Pittsburgh Foundrymen's Association at the Fort Pitt Hotel, Monday evening, March 15. The speakers will talk on "The Bosshardt High Temperature Steel Furnace."

Rogers Brown & Crocker Brothers, Inc., New York, has been appointed exclusive sales agent for the pig iron produced by the Struthers Furnace Co., Struthers, Ohio.

FABRICATED STEEL

Week's Structural Awards Take a Big Jump with a Total Over 63,000 Tons

Including 20,000 tons for the Cleveland Union Terminal, 9500 tons for a building in San Francisco and upward of 10,000 tons of miscellaneous work in the New York metropolitan district, the week's structural steel awards totaled more than 63,000 tons, a figure which considerably outdistances the record of any week this year. The awards follow:

NEW YORK, 7790 tons, in the following jobs reported by the Structural Steel Board of Trade: Loft at 230 West Thirty-ninth Street and apartment building at 319 West Forty-eighth Street, to Paterson Bridge Co.; garage alterations at 120 West Fifty-second Street, factory building at Yonkers for the National Sugar Refining Co. of New Jersey, to the Hedden Iron Construction Co.; apartment building at 325 East Seventy-second Street for Walton Hall, Inc., loft at Seventh Avenue and Twenty-eighth Street for E. Kheel & Son, and an apartment hotel at 127-139 West Seventy-ninth Street for Kidansky & Levy, Inc., to the Taylor-Fichter Steel Construction Co.; Harlem Hospital and Nurses' Home at Fordham Hospital, to Shoemaker Bridge Co.; extension to Architects' Building, 101 Park Avenue, an apartment building at Madison Avenue and Sixty-seventh Street, a New York Edison Co. distributing station on East Thirty-second Street and a bank building at Glen Cove, Long Island, to the McClintic-Marshall Co.; loft building at 20-22 East Fifty-seventh Street for Arthur Brisbane, to Harris Structural Steel Co.

NEW YORK, 1150 tons, section 8, route 78, subways, to American Bridge Co.

NEW YORK, 300 tons, apartment building on Mott Avenue, to Easton Structural Steel Co.

NEW YORK, 500 tons, apartment building at 148-150 West Fifty-eighth Street, to Easton Structural Steel Co.

BROOKLYN, 200 tons, Brooklyn-Manhattan Transit Co., extension of subway platform, to American Bridge Co.

JERSEY CITY, 500 tons, Hudson County Jail, to Selbach-Meyer Co.

CHESTER, PA., 375 tons, textile plant, to Belmont Iron Works.

BROOKLINE, MASS., 300 tons, garage, to Palmer Steel Co.

NEW HAVEN, CONN., 300 tons, Masonic Temple, to Berlin Construction Co.

MASSENA, N. Y., 675 tons, Aluminum Co. of America, to American Bridge Co.

BUFFALO, 200 tons, storage building for American Radiator Co., to Kellogg Structural Steel Co.

BANCROFT, MICH., 100 tons, Michigan State highway bridge, to American Bridge Co.

CLEVELAND, 20,000 tons, Union Terminals Co., tower for depot project, to American Bridge Co.

CLEVELAND, 1000 tons, addition to Hollenden Hotel, to Forest City Structural Steel Co.

TOLEDO, 700 tons, factory building for Electric Auto Lite Co., to unnamed fabricator.

YOUNGSTOWN, 725 tons, Fitch Garage, to McClintic-Marshall Co.

LOUISVILLE & NASHVILLE RAILROAD, bridges, 1200 tons to American Bridge Co., 900 tons to McClintic-Marshall Co., 300 tons to Virginia Bridge & Iron Co., and 80 tons to Louisville Bridge & Iron Co.

DETROIT, 2500 tons, Ford Motor Co., spring and setting-up building, to Milwaukee Bridge Co.

INDIANAPOLIS, 1000 tons, War Memorial, to Insley Mfg. Co.

GARY, IND., 225 tons, Walter Bates Steel Corporation, fabricating shop, to American Bridge Co.

CHICAGO, 350 tons, substructure for La Salle Street bridge, to American Bridge Co.

CHICAGO, 3000 tons, University of Chicago Stadium, to American Bridge Co.

CHICAGO, 425 tons, Union Trust Co., vault grill work, to American Bridge Co.

CHICAGO, 2900 tons, Roanoke Building, to American Bridge Co.

SOUTH CHICAGO, 150 tons, Chicago, Rock Island & Pacific Railway, girder spans, to American Bridge Co.

CUDAHY, WIS., 1000 tons, Federal Rubber Co., building, to Wisconsin Bridge Co.

INTERNATIONAL FALLS, MINN., 325 tons, Minnesota & Ontario Paper Co., board mill, to Minneapolis Steel & Machinery Co.

EAGLE PASS, TEX., 1050 tons, International Bridge, to Missouri Valley Bridge & Iron Co., Leavenworth, Kan.

SAN FRANCISCO, 9500 tons, Russ Building, Pine and California Streets, to United States Steel Products Co.

SAN FRANCISCO, 525 tons, Hale Brothers, department store addition, to Western Iron Works.

SAN FRANCISCO, apartment house, 200 tons, to Dyer Brothers, local.

OAKLAND, CAL., 310 tons, Webster Street Bridge, to Moors Dry Dock Co.

ENGLEWOOD, CAL., telephone building, 125 tons, to Llewellyn Iron Works.

LOS ANGELES, Union Oil Co., tanks, 2020 tons, to Western Pipe & Steel Co.

LOS ANGELES, Pan-American Petroleum & Transport Co., tanks, 425 tons, to unnamed fabricator.

LOS ANGELES, unnamed fabricator, 600 tons, to Eastern mill.

TACOMA, WASH., pipe line, 300 tons, to Willamette Iron & Steel Co., Portland.

PORTLAND, ORE., bridge, 170 tons, to unnamed fabricator through Union Bridge Co., Portland.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

NEW YORK, 3000 tons, viaduct at 137th Street for the New York Central Railroad.

SYRACUSE, N. Y., 700 tons, Post-Standard Building.

ITHACA, N. Y., 400 tons, department store.

TROY, N. Y., 100 tons, library building for Rensselaer Polytechnic Institute.

PHILADELPHIA, 500 tons, store for the McCrory chain.

LONG ISLAND RAILROAD, 100 tons, bridge.

NEW YORK CENTRAL RAILROAD, 300 tons, bridges.

CHICAGO, 1200 tons, Midwest Athletic Club.

CHICAGO, 5000 tons, Harmon Sport Arena.

KANSAS CITY, MO., 1500 tons, Midland Theater.

MEMPHIS, TENN., 1000 tons, bridge.

MILWAUKEE, unit No. 3, Central Continuation School, 700 tons; Worden-Allen Co., low bidder at \$84,942.

STOCKTON, CAL., 200 tons, Pacific Gas & Electric Co. building.

SAN FRANCISCO, 410 tons, State armory roof; bids March 29.

SACRAMENTO, CAL., 140 tons, grandstand; Golden Gate Iron Works, San Francisco, low bidder.

WENATCHEE, WASH., 100 tons, filtration plant.

REINFORCING STEEL

Week's Awards Close to 2700 Tons While New Projects Total About 3200 Tons

The week's awards of reinforcing bars total almost 2700 tons, of which 1200 tons is for a New York office building. Among 3200 tons of new work on which bids are being taken is a Buffalo cement plant requiring 1200 tons. Awards follow:

NEW YORK, 1200 tons, for Equitable Trust Building, Broad and Wall Streets, to Jones & Laughlin Steel Corporation.

NEW YORK, 550 tons, loft building, Varick and Charlton Streets, to Milton Mfg. Co.

PIERMONT, N. Y., 315 tons, Robert Gair Co., factory, to Donner Steel Co.

CLEVELAND, 100 tons, Park Hall Apartment, to Paterson-Leitch Co.

CHICAGO, 100 tons, Kiesel apartment building, to Olney J. Dean Co.

MICHIGAN CITY, IND., 100 tons, Merchants National Bank Building, to Olney J. Dean & Co.

SPRINGFIELD, ILL., 172 tons, waterworks construction, to Laclede Steel Co.

ARLINGTON, TENN., 150 tons, bridge, to Concrete Engineering Co.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

BUFFALO, 1200 tons, cement mill, Great Lakes Cement Corporation; bids being taken.

WELLSVILLE, N. Y., 250 tons, metal lumber and bars; bids taken.

OLEAN, N. Y., 200 tons, for Pennsylvania roadwork.

SOUTH ORANGE, N. J., 175 tons, Maplewood High School.

NEW YORK, 305 tons, Freda-Andrea Radio Corporation, plant.

BROOKLYN, 200 tons, warehouse, Security Fireproof Storage Co.; R. W. Smith Construction Co., New York, general contractor.

CHICAGO, 325 tons, Lawrence Avenue subway, for Chicago and Western Indiana Railroad; general contract awarded to Underground Construction Co.

CHICAGO, 400 tons, apartment building at Pearson and Seneca Streets; Guske & Foster, architects.

ST. LOUIS, 150 tons, St. Anthony's Hospital addition.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin (Spot)		Lead		Zinc	
	Lake	Electro-lytic*	New York	St. Louis	New York	St. Louis	New York	St. Louis
March								
2.....	14.25	13.87½	63.50	8.75	8.45	7.72½	7.37½	
4.....	14.25	13.87½	63.65	8.75	8.45	7.77½	7.42½	
5.....	14.25	14.00	64.00	8.75	8.45	7.85	7.50	
6.....	14.37½	14.00	.....	8.75	8.45	7.85	7.50	
8.....	14.37½	13.95	63.75	8.60	8.30	7.80	7.45	
9.....	14.37½	13.95	64.00	8.60	8.30	7.75	7.40	

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, March 9.

None of the markets are particularly active and prices in most of them tend downward. The copper market is dull but prices are a shade higher. Quotations for tin have eased somewhat in a moderately active market. Sharp reductions have been made in lead. In the zinc market buying has been a little better and prices a little higher.

Copper.—A fair business was done by several producers on March 4, 5 and 6, the result of which was a slight stiffening of prices to 14.25c., delivered. One or two companies report actual business done at this level in the Valley on March 5. Since then buying has subsided and metal is available at 14.20c., delivered. This seems to be the minimum price although 14.15c. and 14.17½c. have been mentioned as prices at which business could be done today. No test of the market on a large scale has been possible and prices today are therefore largely nominal. It is stated that consumers still have considerable April metal to buy and that there is a large potential demand under the market. The situation in France and in Germany has had considerable effect upon the export demand which is very light at present. Lake copper is quoted at 14.25c. to 14.37½c., delivered.

Tin.—The most active day in the past week was Thursday, March 4, and about 500 tons was sold, with consumers the largest buyers. Business on all other days, including yesterday, was light, with the total turnover about 450 tons. Today the market has been moderately active with 250 tons sold. The political and economic mixup on the other side of the water has had its effect on the tin market and it is a matter of remark that prices keep up as well as they do. Although quotations have been sagging to some extent, ordinarily under the conditions mentioned the market would usually break wide open. Spot Straits tin today was quoted at 64c., New York. Prices in London today were about £2 per ton less than a week ago, with spot standard quoted at £292 7s. 6d., future standard at £282 15s. and spot Straits at £292 10s. The Singapore price today was £284 10s. Arrivals thus far this month have been 905 tons, with 5999 tons reported afloat.

Lead.—Two more reductions by the American Smelting & Refining Co. in its contract quotations was the feature of the past week. On March 3 the quotation was reduced 8.90c. to 8.75c. and late yesterday, March 8, a further reduction to 8.60c., New York. The latter is the fourth reduction in the last two weeks. A primary cause has been the influence of lower prices in London. The market is very quiet and in some directions there is more or less keenness to sell, but buyers are holding back. In the outside market lead is quoted at 8.30c., St. Louis, or 8.60c., New York.

Zinc.—A slightly better demand from galvanizers and considerable activity by dealers stiffened the market during the past week until prime Western reached 7.50c., St. Louis. Since then the market has turned weaker, due partly to lower values in London, and today the metal is available at 7.40c., St. Louis, or 7.75c., New York. Demand is again very light. It is anticipated that the statistics for February which will be made public tomorrow will not be favorable to sellers.

Nickel.—Ingot nickel in wholesale lots is quoted at 35c., with shot nickel at 36c. and electrolytic nickel at 39c. per lb.

Antimony.—The market is quiet and inactive and Chinese metal for spot and early delivery is quoted at 19.50c., New York, duty paid, with March-April arrival at 19c. April-May shipment from China is quoted at 18c.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is obtainable as ingots at 27c. to 28c. per lb., delivered.

Old Metals.—Business is fair with the market in a firmer condition. Dealers' selling prices, in cents per lb., are as follows:

Copper, heavy and crucible.....	13.75
Copper, heavy and wire.....	13.00
Copper, light and wire.....	11.75
Heavy machine composition.....	10.00
Brass, heavy.....	9.00
Brass, light.....	7.75
No. 1 red brass or composition turnings..	9.00
No. 1 yellow rod brass turnings.....	9.25
Lead, heavy.....	7.50
Lead, tea.....	6.50
Zinc.....	5.00
Cast aluminum.....	19.50
Sheet aluminum.....	19.50

Chicago

MARCH 9.—This market is slightly more active than a week ago, but supplies of practically all metals are more than adequate for current demand and prices are generally lower. Copper, tin, lead and antimony are now quoted below the prices which prevailed a week ago and zinc is unchanged. The old metal market is quiet and, although there are few changes in prices, the general tendency is downward. We quote, in carload lots: Lake copper, 14.35c.; tin, 64.75c.; lead, 8.60c.; zinc, 7.60c.; in less than carload lots, antimony, 22c. On old metals we quote copper wire, crucible shapes and copper clips, 10.25c.; copper bottoms, 9.25c.; red brass, 9c.; yellow brass, 8c.; lead pipe, 7c.; zinc, 5c.; pewter, No. 1, 37c.; tin foil, 44c.; block tin, 52c.; aluminum, 19.50c.; all being dealers' buying prices for less than carload lots.

Non-Ferrous Rolled Products

Prices on brass, bronze and copper products have remained unchanged since they were advanced ¼c. per lb. as of Feb. 5. Zinc sheets have not been changed in 11 weeks. Lead full sheets are the same as a week ago. For New York warehouse prices see page 752.

List Prices Per Lb., f.o.b. Mill

On Copper and Brass Products, Freight Up to 75c. Per 100 Lb. Allowed on Shipments of 500 Lb. or Over

Sheets	
High brass.....	19½c.
Copper, hot rolled.....	22½c.
Zinc.....	12c.
Lead (full sheets).....	12½c.
Seamless Tubes	
High brass.....	23¾c.
Copper.....	24½c.
Rods	
High brass.....	16¾c.
Naval brass.....	19½c.
Wire	
Copper.....	16½c.
High brass.....	19½c.
Copper in Rolls.....	21½c.
Brazed Brass Tubing.....	27½c.

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of the Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets, 0 to 10 gage, 2 to 30 in. wide..	37½c.
Tubes, base.....	48c.
Machine rods.....	34c.

The presentation of the John Fritz gold medal to Edward Dean Adams, "whose vision, courage and industry made possible at Niagara Falls the birth of hydroelectric power," will be made on Tuesday evening, March 30, at the Engineering Societies Building, New York. The speakers will be Lt.-Col. Frank B. Jewett, James M. Beck, formerly solicitor-general of the United States; Dr. Arthur E. Kennelly, professor of electrical engineering Harvard University, and Major Fred J. Miller.

PERSONAL

George E. Wisener, who will retire on July 1, as general superintendent Mingo and Bellaire, Ohio, works of the Carnegie Steel Co., and at the same time also withdraw from active business and thereafter devote his time to leisurely pursuits, has been connected with the steel industry for 40 years. Of that period 39 years have been with the Carnegie company, which he joined after spending about a year with the old Hartman steel works, Beaver Falls, Pa. His first connection with the Carnegie Steel Co. was as assistant recorder at its Homestead works and he remained at that plant for a period of 20 years, serving successively as head of the structural shipping department, steel blower and foreman of the Bessemer department, and finally as superintendent of the Bessemer department and blooming mills. He held the latter position for five years and it was recognition of his ability as a Bessemer steel man that led to his selection in 1907 to the position he soon will relinquish. Mr. Wisener has made his home at Steubenville and has been a conspicuous figure in the civic activities of that city. He was born in Pittsburgh Dec. 10, 1866, and received his education in the public schools of Beaver, Pa., and at Geneva College, Beaver.



GEORGE E. WISENER

J. E. Hall, for a number of years assistant to the sales manager, Hill, Clarke & Co., Inc., Boston, will represent that company, effective April 1, in the Connecticut territory. For the present he will make his headquarters at the Boston office of the firm.

Raymond H. Sullivan, vice-president and general superintendent North & Judd Mfg. Co., New Britain, Conn., has resigned and has been succeeded by Michael O'Hayer, who has been associated with the company for some 20 years. Mr. Sullivan formerly was with the Yale & Towne Mfg. Co., Stamford, Conn.

Royal B. Doane, designing engineer Berlin Construction Co. the past 12 years, has resigned, to become sales manager of the Porcupine Co., Bridgeport, Conn. Albert W. Zahnleiter has succeeded Mr. Doane.

K. H. Crumrine, sales engineer Cincinnati Shaper Co., Cincinnati, has resigned, to become associated with the National Acme Co., Cleveland.

M. H. Geisking has been appointed assistant district sales manager at Cincinnati for the Carnegie Steel Co., succeeding L. M. Hartzell, who has resigned, as noted in THE IRON AGE last week. Mr. Geisking has been the Columbus, Ohio, sales representative of the company for a number of years.

J. C. Bilek has been appointed Chicago district manager for the Driver-Harris Co., Harrison, N. J. He has been with the company for 16 years and has handled the New York territory. H. D. Tietz, who has been with the company since his return from the World War, will be associated with Mr. Bilek as assistant district manager in Chicago.

A. G. J. Rapp, who for the past 30 years has been

with the Link-Belt Co., Chicago, has recently taken charge of the engineering department of the National Engineering Co., 549 West Washington Boulevard, Chicago. This department will supply engineering services as well as complete sand handling and sand preparing systems, in which are incorporated the sand mixer, the sand aerator and screen.

H. C. Merritt was appointed, effective Jan. 1, manager of the tractor division of Allis-Chalmers Mfg. Co., Milwaukee, succeeding George J. Gardner, resigned. Mr. Merritt has been with Allis-Chalmers since December, 1922. Prior to that time he was branch manager for the Holt Mfg. Co., Kansas City, general sales manager Hart-Parr Co., Charles City, Iowa, and branch manager for Hart-Parr Co. at Great Falls, Mont. W. E. Hawkinson will act as assistant manager under Mr. Merritt.

W. C. MacFarlane has recently been made president Minneapolis Steel & Machinery Co., succeeding E. A. Merrill, who continues as the company's treasurer. Mr. MacFarlane has been vice-president and general manager since early in 1925.

R. B. Flershem, American Radiator Co., New York, has been elected vice-president in charge of the sales executives division of the American Management Association.

Director George K. Burgess of the Bureau of Standards, Department of Commerce, addressed the American Society of Mechanical Engineers at Williamsport, Pa., on the "Relations of the Bureau of Standards to the Mechanical Engineering Profession," explaining the functions and facilities of the bureau.

James W. Campbell has been elected president and treasurer Cleveland Wire Spring Co. and Charles H. Erickson, vice-president and general superintendent.



C. H. ERICKSON

The company, a pioneer in the manufacture of coiled and flat springs, was incorporated in 1892 by Edward S. Page, R. C. Moody, W. A. Comstock and others, who were then officers of the old Cleveland Rolling Mill Co., now the Newburg Works of the American Steel & Wire Co., Cleveland. Mr. Campbell, office boy at the old Cleveland Rolling Mill Co. when Messrs. Page, Moody, Comstock and others left there to head the Cleveland Wire Spring Co., went with them. He has been there ever since. Mr. Erickson started in the spring business in 1893 at the Washburn & Moen Mfg. Co., Worcester, Mass. He obtained his training there under the guidance of C. S. Marshall, the "dean" of the spring industry, who is now manager of the Worcester district for the American Steel & Wire Co.

S. B. Gardiner, for some years bar salesman for the Illinois Steel Co. in the Chicago district, has joined the New York sales organization of the Donner Steel Co., Buffalo.

A. B. Holcomb has been appointed Pittsburgh district manager for the Clark Controller Co., Cleveland, with office at 994 Union Trust Building.

Mark L. C. Wilde has been appointed manager of the Philadelphia branch, 308 North Fifteenth Street, of the Colonial Steel Co., Pittsburgh.

E. Kay Ford has been appointed district sales manager of the M. A. Hanna Co., Cleveland, for its Detroit territory, succeeding Bertram S. Stevenson, who recently resigned. Mr. Ford has been Mr. Stevenson's assistant for several years.

W. C. Alcorn, former head of the stamping department, Transue & Williams Steel Forging Corporation, Alliance, Ohio, has resigned after 11 years of service with that company and accepted a position with the Richardson Co., investment bankers, Toledo. He will leave at once for his new post. Mr. Alcorn, who was prominent in industrial and civic circles in Alliance, will have charge of the rebuilding of plants taken over by the Richardson Co. in its wide-spread investment operations.

Susan B. Leiter, microscopist, research laboratories, General Electric Co., Schenectady, holds the distinction of having been the first woman member of



SUSAN B. LEITER

the Institute of Metals Division of the American Institute of Mining and Metallurgical Engineers to present a scientific paper in person before one of its technical sessions. At a session at the February meeting of the institute she delivered a paper on "Annealing of Commercial Copper to prevent Embrittlement by Reducing Gases." A brief extract of it was published in THE IRON AGE, Feb. 25, page 554.

S. R. Willock has been elected vice-president and a director of the Wellman-Seaver-Morgan Co., Cleveland, in charge of engineering and sales. He was formerly assistant sales manager Mackintosh-Hemphill Co., Pittsburgh. Previous to that he was with the Westinghouse Machine Co., Pittsburgh, structural engineer for Heyl & Patterson, Inc., Pittsburgh, sales engineer Mesta Machine Co., Pittsburgh, sales manager Treadwell Engineering Co., New York, sales manager William Tod Co., Youngstown, Ohio, and vice-president Woodard Machine Co., Wooster, Ohio, going with the Mackintosh-Hemphill Co. when that company took over the Woodard Machine Co.

Dr. William Campbell, Howe professor of Metallurgy, Columbia University, who delivered the annual Howe memorial lecture before the American Institute of Mining and Metallurgical Engineers late in February, was graduated from King's College, London, in 1892. His education was further broadened at St. Kenelm's College, Cowley, Oxford, 1892 to 1894; Durham University College of Science, 1894 to 1897, and Royal School of Mines, London, 1899 to 1901. He received the degree of doctor of science in 1905 from Durham University College of Science and his degree of doctor of philosophy from Columbia University in 1903. He was demonstrator in metallurgy and lecturer in geology at the Durham College of Science, 1898 to 1899. He became a university fellow at Columbia University in 1902, instructor in metallurgy, 1904 to 1907, adjunct professor, 1907 to 1912, associate professor, 1912 to 1914 and professor in the school of mines from 1914 to the present time. Doctor Campbell was a lecturer on metallurgy at the United States Naval Academy post graduate school in 1913, editor of the *School of Mines Quarterly* in 1910 and assistant editor *International Journal of Metallography* and *Journal of*

Industrial and Engineering Chemistry. He is a member of the Iron and Steel Institute, the International Association for Testing Materials and of the leading American technical organizations.

Samuel A. Taylor, newly elected president American Institute of Mining and Metallurgical Engineers, was born near McKeesport, Pa., in 1863. His education was obtained in the public schools, the Polytechnic Institute in Allegheny, and at what is now the University of Pittsburgh, from which he was graduated in 1887 as a civil engineer. The same institution bestowed upon him the honorary degree of doctor of science in 1919. In July, 1887, he became a draftsman in the new structural steel department at the Homestead plant of the Carnegie Steel Co. and a year later became assistant engineer of construction of branch lines for the Pennsylvania Railroad, where he remained until October, 1893. Since then he has been a civil and mining consulting engineer with offices in Pittsburgh. Most of his time has been devoted to coal mining and its allied industries, both in a consultant and managerial capacity. He was president of the Coal Mining Institute of America in 1911, of the American Mining Congress in 1913 and of the Engineers' Society of Western Pennsylvania in 1914.

James A. Campbell, president of the Youngstown Sheet & Tube Co., Youngstown, has returned to Florida to spend the remainder of the winter. He is visiting his son, L. J. Campbell, now in the real estate business, formerly president of the Atlas Crucible Steel Corporation, Dunkirk, N. Y.

F. F. Lucas, member technical staff, Bell Telephone Laboratories, New York, delivered a popular lecture before the New York Electrical Society on the evening of March 10. He discussed high-power photomicrography and the ultra-violet ray.

Charles K. Strassner, Anderson, Ind., was elected president of the Sheet Metal Contractors' Association of Indiana, at the close of the seventh annual convention at the Hotel Severin, Indianapolis, on Feb. 18. Other officers elected were: Elmer Livezey, Newcastle, first vice-president; Charles Gatz, Gary, second vice-president; William N. Strassner, Anderson, secretary; Charles E. Tharp, Fort Wayne, treasurer. New directors are A. W. Dudley, Terre Haute; W. A. Brown, Marion; John Balkema, Lafayette; V. L. Rowland, Elkhart; Joseph C. Gardner, Indianapolis, and Harry W. Neal, Indianapolis.

American Iron, Steel and Heavy Hardware Association Moves to Philadelphia

The American Iron, Steel and Heavy Hardware Association, which for many years has maintained secretarial headquarters in the Marbridge Building, Broadway and Thirty-fourth Street, New York, has moved to Philadelphia, having placed its affairs in the hands of the organization of T. James Fernley, 505 Arch Street, that city, following the resignation of A. H. Chamberlain as secretary.

Mr. Fernley is secretary of the National Hardware Association, the shelf hardware jobbers' organization, and also handles the business affairs of a number of other national trade associations. He has appointed Benjamin R. Sackett secretary of the American Iron, Steel and Heavy Hardware Association and offices have been taken at 503 Arch Street, Philadelphia. Mr. Sackett was formerly assistant district engineer in Philadelphia for the S. K. F. Industries, Inc.

The association will hold its next annual meeting at Atlantic City, N. J., on May 25, 26 and 27.

For the Guggenheim copper developments in Chile, the Hardie-Tynes Mfg. Co., Birmingham, has finished the first unit of machinery, which has now been tested preparatory to shipment.

OBITUARY

MARTIN SCHEELER, president of the Buffalo Wire Works Co., Inc., and a lifelong resident of Buffalo, whose death Feb. 28 at his home, 28 Willowlawn Avenue, Buffalo, N. Y., after a short illness, was reported in this column March 4, first entered the employ of Hotchkiss & Co., jewelers, in 1883. He left that firm two years later to enter the wire weaving business under the firm name of Scheeler & Son, with his father and brother, both of whom died several years ago. He was elected secretary and treasurer in 1903, at which time the firm was incorporated under the name of Buffalo Wire Works Co. Mr. Scheeler continued in the wire business, improving and enlarging his plant and was elected president in 1908, which position he held at the time of his death. He was also a director of the Buffalo Galvanizing & Tinning Works, Jackson Street, Buffalo.



MARTIN SCHEELER

JAMES H. NUTT, secretary of the Western Bar Iron Association and of the Western Sheet and Tin Plate Manufacturers' Association, died of pneumonia March 7 at the age of 77, following a brief illness. Mr. Nutt represented the organizations of manufacturers named, at the bi-monthly wage settlements and annual conferences with the Amalgamated Association of Iron, Steel and Tin Workers. He had acted for employers from the time of the inception of the sliding scale wage plan, and enjoyed the confidence of both the workers and the employers. At the yearly conferences Mr. Nutt proved a powerful factor in helping to effect agreements, and his mediation often prevented disagreements. Born in England in 1848, he came to this country when still a youth and found employment in the puddle mills of the Mahoning Valley. Subsequently he entered the service of the city of Youngstown, and in 1891 was appointed commissioner of the Labor Bureau of the Mahoning Valley Manufacturers' Association. He was one of the organizers of the Western Bar Iron Association, which he served as secretary from 1906 until the time of his death. In 1912 he helped form the Western Sheet and Tin Plate Manufacturers' Association, which, also, he served as secretary. Both organizations were formed by the employers to deal with the Amalgamated association. Mr. Nutt was a member of the city council and of the Board of Education of Youngstown.

JEPHTHA H. WADE, one of Cleveland's most prominent citizens, well known for his philanthropies, died at his winter home in Thomasville, Ga., March 6. He was connected as a director and in other executive capacities with a number of leading Cleveland industries and with philanthropic and other organizations. In the iron and steel industry he had two important connections. He was president and one of the largest stockholders of the Montreal Mining Co., an Oglebay-Norton Co. organization that operates an iron mine on the Gogebic Range. He had been associated with the Montreal company and its predecessor for 40 years, and had always participated in its management. He was vice-president of the Cleveland-Cliffs Iron Co. and one of its largest stockholders, and for many years took an active interest in the development of that company. He was a director of the Sandusky Portland Cement

Co., the Cleveland Stone Co., the Graselli Chemical Co. and the National Refining Co.

JOHN N. ALLEN, for the past three years purchasing agent of the Donner Steel Co., Buffalo, died last week. His funeral took place March 8, with interment in Cleveland. Mr. Allen for a number of years was purchasing agent of the Lackawanna Steel Co. and a few years ago became purchasing agent of the Brier Hill Steel Co., Youngstown, Ohio. Three years ago he assumed a similar position with the Donner company. He was a member of several clubs and resided at the Buffalo Athletic Club.

J. E. SCHINDLER, a past-president of the Chicago Foundrymen's Club, died at Chicago, March 7, following an operation for appendicitis. He was 46 years old and was foundry superintendent at the Famous Mfg. Co., East Chicago, Ind. He was formerly associated with the Garden City Foundry Co. and the Mineral Supply Co., both of Chicago. Funeral services were held March 10.

WILLIAM J. TOLLERTON, general superintendent of motive power, Chicago, Rock Island & Pacific Railway, died at his home in Beverly Hills, Ill., March 3, aged 55 years. In 1915 he was chairman in charge of the Railway Labor Arbitration case, representing all the Chicago railroads. He served as chairman of the mechanical division of the American Railway Association and was delegate to the International Railway Congress at Rome in 1922. A widow, a son and a daughter survive.

CONRAD A. HAERTEL, one of the most prominent industrial leaders in Wisconsin and founder of several large metal-working plants, died at his home in Waukesha, Wis., on March 2. Serious illness in 1918 caused him to relinquish active direction of enterprises, although he was in close touch and an officer until his death. Mr. Haertel was born in Germany on Sept. 21, 1851, and when five years old came to American with his parents, who settled in Waukesha. His father established a hardware store, which the son continued after his death. In 1900 he laid the foundation for the first of his industries, the Waukesha Malleable Iron Co., which a few years ago was acquired by the General Motors Corporation. In turn there were founded the Spring City Foundry Co., the Waukesha Motor Co., and the Waukesha Brass Foundry. After serving as president of the motor company since organization, Mr. Haertel a year ago became chairman of the board. He also served as a director of the several foundry companies, and of the Waukesha National Bank.

L. S. SCHMIDT, president S. R. Smythe Co., contracting engineer, Oliver Building, Pittsburgh, fell to the street in the downtown section of Detroit, March 4, and died in an ambulance en route to a hospital. Acute indigestion was given as the cause of death. He was in Detroit in connection with a series of open-hearth furnaces which the Smythe company is installing at the River Rouge plant of the Ford Motor Co. He was born in Fremont, Ohio, and had been a resident of Pittsburgh for 30 years. He became associated with the S. R. Smythe Co. ten years ago as chief engineer and a short time ago acquired control of the company and assumed the presidency of the organization.

FRANK ANDREW, president Electric Railway Equipment Co., Cincinnati, died at Fort Meyer, Fla., on March 5, following a short illness. He was 80 years of age and had been president of the company since its organization in 1920.

GEORGE A. SEARS, president Union Bridge Co., Seattle, died suddenly in Spokane, Wash., March 2. His company built several notable bridges in Oregon and Washington.

European Steel Consumers Depressed

French Rolling Stock and Machinery Builders Undersell German—British Pig Iron Firm but Continental Quiet

(By Cable)

LONDON, ENGLAND, March 8.

THE threatened strike in the engineering industry has not yet been averted and the iron and steel markets are consequently unstable. The pig iron market is dull and with coke prices weak consumers are anticipating lower prices, although furnaces are not yet disposed to grant concessions. Domestic demand for hematite is moderate but export sales of both Cleveland and hematite are poor. Foreign ore is dull, with consumers buying for immediate requirements only, in view of the uncertain coal situation. Bilbao Rubio is still 21s. 3d. to 21s. 6d. c.i.f. Tees.

There is moderate activity in the domestic market for finished iron and steel but export sales are on a restricted scale.

The London, Midland & Scottish Railway has placed orders for 50 express locomotives and 5800 goods wagons (freight cars).

Tin plate is quiet but steady. Some business has been transacted but buyers generally are awaiting further development of the pooling plan of makers. Galvanized sheets are weak in the absence of large orders. Corrugated sheets of No. 24 gage, in bundles, have sold as low as £15 17s. 6d. f.o.b. Black sheets are quiet and prices unchanged.

On the Continent

Continental markets are weak in the absence of substantial buying and renewed German competition. Sheet bars have sold at £4 14s. f.o.b., merchant bars at £5 6s. f.o.b., and joists (beams) at £4 18s. f.o.b.

In France 149 furnaces were in blast on Feb. 1. German mills are desirous of extending the proposed European rail syndicate into a raw iron and steel syndicate on a pooling basis and French makers are reported to be willing to cooperate.

British Pig Iron Demand Still Exceeds the Available Supply

LONDON, ENGLAND, Feb. 18.—There is an acute shortage of pig iron, although consumers are well covered at present. But little tonnage is available for prompt shipment and for forward delivery furnaces are able to secure higher prices. Thus far merchant production has not been increased but two steel makers have blown in two furnaces for their own use. High cost of production is still the principal obstacle to the blowing in of further furnaces. Continental iron is competitive but with furnaces in Germany, France and Belgium well booked with business, but little tonnage is finding its way to British users.

Finished iron and steel have been slightly more active, but prices have not yet been affected by the improvement in demand. The fact that most of the current orders are small has made competition between important plate mills a factor, concessions to

secure the business usually being granted. Although a few sizable plate orders have developed from the shipyards, plate mills are still in need of tonnage. The Admiralty has just placed two cruisers, completing the 1925-26 cruiser program, and in addition several contracts for motor-driven liners have been taken by British yards.

Both black and galvanized sheets are fairly active, galvanized demand, particularly for export being in good volume. In January, more than 60,000 tons of galvanized sheets were exported, of these about 30,000 tons went to India. Tin plate purchasing has been rather light, but with the pooling plan in effect, restricting output, makers look forward to higher prices. Present prices are considered too low to permit profit, some makers recently having gone to 19s. 1½d. per base box.

Considerable interest has been aroused by the announcement that the treasury under the Trades Facilities Acts is guaranteeing £2,000,000, principal and

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.86 per £ as follows:

Durham coke, del'd.	£0 19s.	to £0 19½s.	\$4.62	to*	\$4.73
Bilbao Rubio ore f.	1 1½		5.22		
Cleveland No. 1 fdy.	3 12½	and 3 13*	17.62	and 17.74*	
Cleveland No. 3 fdy.	3 10	and 3 10½*	17.01	and 17.13*	
Cleveland No. 4 fdy.	3 9	and 3 9½*	16.77	and 16.88*	
Cleveland No. 4 forge	3 8	and 3 8½*	16.52	and 16.65*	
Cleveland basic	3 10	and 3 10½*	17.01	and 17.13*	
East Coast mixed	3 17½	to 3 18	18.83	to 18.95	
East Coast hematite	4 19		24.06		
Ferromanganese	15 10		75.33		
*Ferromanganese	15 5		74.12		
Rails, 60 lb. and up.	7 5	to 8 0	35.24	to 38.88	
Billets	6 0	to 7 10	29.16	to 36.45	
Sheet and tin plate bars, Welsh	6 5		30.38		
Tin plates, base box.	0 19¼	to 0 19¾	4.68	to 4.80	
C. per Lb.					
Ship plates	7 0	to 7 10	1.52	to 1.62	
Boiler plates	11 0	to 11 10	2.39	to 2.49	
Tees	7 5	to 7 15	1.57	to 1.68	
Channels	6 10	to 7 0	1.41	to 1.52	
Beams	6 5	to 6 15	1.35	to 1.46	
Round bars, ¾ to 3 in.	7 15	to 8 5	1.68	to 1.79	
Steel hoops	10 10	and 11 0*	2.28	and 2.39*	
Black sheets, 24 gage	11 5	to 11 10	2.35	to 2.49	
Black sheets, Japanese specifications	14 15		3.19		
Galv. sheets, 24 gage.	15 17½	to 16 5	3.44	to 3.52	
Cold rolled steel strip, 20 gage	18 0		3.91		

*Export price.

†Ex-ship, Tees, nominal.

Continental Prices, All F.O.B. Channel Ports

Foundry pig iron:(a)					
Belgium	£3 2s.	to £3 4s.	\$15.06	to \$15.55	
France	3 2	to 3 4	15.06	to 15.55	
Luxemburg	3 2	to 3 4	15.06	to 15.55	
Basic pig iron:(a)					
Belgium	3 0	to 3 2	14.58	to 15.06	
France	3 0	to 3 2	14.58	to 15.06	
Luxemburg	3 0	to 3 2	14.58	to 15.06	
Coke	0 18		4.37		
Billets:					
Belgium	4 8	to 4 11	21.38	to 22.11	
France	4 8	to 4 11	21.38	to 22.11	
Merchant bars:					
			C. per Lb.		
Belgium	5 6½	to 5 8	1.15	to 1.17	
Luxemburg	5 6½	to 5 8	1.15	to 1.17	
France	5 6½	to 5 8	1.15	to 1.17	
Joists (beams):					
Belgium	4 18	to 5 2½	1.08	to 1.13	
Luxemburg	4 18	to 5 2½	1.08	to 1.13	
France	4 18	to 5 2½	1.08	to 1.13	
Angles:					
Belgium	5 2	to 5 4	1.12	to 1.15	
¾-in. plates:					
Belgium	6 0	to 6 2	1.22	to 1.24	
Germany	6 0	to 6 2	1.22	to 1.24	
¾-in. ship plates:					
Belgium	5 11	to 5 13	1.22	to 1.24	
Luxemburg	5 11	to 5 13	1.22	to 1.24	
Sheets, heavy:					
Belgium	6 3	to 6 4	1.35	to 1.37	
Germany	6 3	to 6 4	1.35	to 1.37	

(a) Nominal.

interest, for 30 years, the capital being used by the Pearson, Dorman, Long interests for the development of the coal fields in Kent. At present two pits are being operated with about 1300 men, but when the field is fully developed a population of about 250,000 will be employed. This interest some time ago purchased the port of Richborough, developed during the war.

German Steel Market Improves

Pig Iron Still Depressed—American Complaints of Dumping Elicit German Reply—Locomotive Orders Small

BERLIN, GERMANY, Feb. 16.—Negotiations between Otto Wolff & Co., Cologne, and the Soviet Union for a large tonnage of tubes are reported to have been unsuccessful. In the meantime the Soviet Government has been negotiating in Germany for credits totaling about 300,000,000 m. to cover projected purchases of tubes, oil-well machinery and other equipment.

The Luther cabinet is still discussing measures against "exchange dumping" of iron and steel. As a result of recent complaints that German iron and steel has been dumped in the United States, the business press points out that German shipments have been about 50 per cent smaller than the shipments of England, Belgium and British India.

While the pig iron market is rather depressed at present, in some quarters the revival in scrap purchasing is believed to presage an improvement. For March, the Pig Iron Syndicate's prices and delivery conditions are unchanged. The market for most products controlled by the Raw Steel Syndicate has improved slightly, but prices are thus far unchanged. Both export and domestic demand for semi-finished material is increasing and export quotations are firmer. Shapes are extremely active and domestic consumers are increasing the size of their purchases of bars. Decline of competition from Saar and French mills has aided the bar market, but this has been somewhat offset by increased Belgian competition. The domestic market on sheets is still quiet, but export demand is improving.

Builders of railroad rolling stock and locomotives are only moderately active and conditions are not particularly satisfactory, because of the disproportion between productive capacity and the possible volume of business, even should foreign purchasing improve. A few small purchases by the Railroads Corporation, the former German State railroads, are expected, but the total is not expected to be more than 50 to 100 locomotives to be distributed among 21 builders and a few hundred cars for the 50 to 60 car builders in Germany. French competition in locomotives is severe, the total capacity of French builders being 600 to 700 locomotives a year. Negotiations now under way between the Railroads Corporation and the Government for a loan of about 200,000,000 m. may enable the corporation to increase its intended purchases.

Shipbuilding continues depressed. The Government offered the shipping companies low interest credits about a year ago, borrowing to be based on payment by the shipping company of half the cost of new vessels. Much of this credit has not yet been taken, as the ship operators found that the expense of financing their part of the building would be too great.

With a few unimportant exceptions, all manufacturers of rivets have united in a Rivets Selling Syndicate, which controls the volume of domestic and export sales. A general improvement is reported in rivet purchasing.

French machine-tools are competing with the German product at low prices and exports to Central and South America have declined considerably. Agricultural machinery makers, however, are quite active. To increase foreign sales, an association of German machinery manufacturers has been formed. In addition to this the German Association of Machinery Manufacturers states that a syndicate may be formed to avoid the restrictions on cartels and "rings" being imposed by the Government in its price-reduction efforts. A syndicate would avoid many of these restrictions.

American Pipe Made in Germany

Tubes with United States Threads Offered for Export—Japan Buys Rails in Europe and the United States

NEW YORK, March 9.—Although the greater number of current purchases of foreign steel are small, the volume is evidently large enough to provide a fairly sizable tonnage. In recent weeks there has been a moderate degree of activity in barbed wire. One importer in New York reports the sale of about 1500 spools to a Florida consumer and two large mail order houses are understood to be negotiating for wire for their warehouses near seaboard. The current quotation on German galvanized barbed wire is 3c. per lb., c.i.f. Atlantic or Gulf port. Florida is providing some activity in materials other than barbed wire, evidenced by the recent award of about 2000 tons of reinforcing bars to a German mill by a Florida consumer. Continental prices on reinforcing bars continue unchanged at about 1.90c. to 1.95c. per lb. for intermediate grade Bessemer and 2.00c. to 2.10c. per lb., c.i.f. duty paid, for open-hearth quality.

From recent developments on the Continent, it would appear that to further extend their export markets, mills, particularly in Germany, are meeting the American manufacturers on their own ground. The larger German mills have increased their output of open-hearth steel in the past few years and in most cases are able to offer rails, plain steel and deformed steel bars, shapes and other products to American specifications. In THE IRON AGE, March 4, was the report that numerous bolt manufacturers in Germany are furnishing United States threads to certain markets that have been dealing largely with American makers and recently it has been reported by exporters to Cuba and other such markets that American type black and galvanized steel pipe is being offered by German sellers.

Although Continental mills are apparently too well-filled with tonnage on rails to be particularly interested in orders from American railroads, evidenced by reports of recent rejections of such business offered to them, there seems to be no difficulty encountered by Japanese buyers in placing rail requirements with European makers. The Osaka Denki Kido has awarded 25 miles of 75-lb. rails and accessories (about 3000 tons) and about 100-tons of Abbott rail joint plates. The rails are understood to have been placed with a German mill and the rail joint plates with an American interest. Another sizable rail tonnage recently placed by a Japanese railroad was 8 miles of 91-lb. girder rails and 2 miles of 91-lb. guard rails awarded to a Japanese export house by the Tokio municipal electric railroad. The girder rails are understood to have been placed with a European mill and the guard rails are pending award to an American maker. The 5000 tons of 100-lb. rails for the Imperial Government Railways has not yet been awarded but exporters to Japan expect this business to go to a European maker.

Most of the tin plate mills in the United States are apparently but little interested in export business, at present being well filled with domestic and a moderate tonnage of export orders. The price of black sheets for export to Japan covers a rather wide range, depending upon the tonnage of sheet business on the books of various makers. While \$84 per ton is still quoted, as low as \$82 to \$82.50 per ton, c.i.f. Japan, seems obtainable on desirable business.

Action on the tariff bill now before the Japanese Diet is expected shortly, as the Diet is scheduled to adjourn March 25.

Chinese business continues to be affected by the civil war, which is an obstacle to shipments of material to the interior. A moderate demand for wire shorts at \$45 to \$47 per ton, c.i.f. Chinese port continues, but the supply is small. Business in second hand material is almost out of the question at present, as a number of old ships are being scrapped at Shanghai, and second-hand plates and similar material is being offered as low as \$23 to \$24 per ton, Shanghai.

Machinery Exports Still High

January Below December But Much Above
Recent Averages — Changes in
Classification Made

WASHINGTON, March 4.—Exports of machinery in January, 1926, were valued at \$34,590,693, as against \$37,933,511 in December. Except for December, this was the largest total since last April. Imports of machinery in January were valued at \$1,659,971, compared with \$1,448,316 in December.

Beginning with January, 1926, import and export machinery schedules were reclassified by the Bureau of Foreign and Domestic Commerce. The changes in the import table were comparatively slight, with the result that THE IRON AGE has left this table unchanged. It also has left unchanged, except in two instances, the general table on machinery exports. The schedule under machine tool exports having been greatly changed by the Bureau of Foreign and Domestic Commerce, a new table has been constructed and in accordance with the arrangement of the Bureau of Foreign and Domestic Commerce is carried under the heading "Power-Driven Metal-Working Machinery."

The changes made in these classes accord with the general purpose of the reclassification, which is to divide the products into more intelligible and more specific items. The new metal-working table shows figures for January, 1926, only, and some of the items heretofore carried, now shown by weight instead of by number, have been eliminated from the new table. At the same time, some additional items have been incorporated. Under the new classification the exports of machine tools in January numbered 917, and were valued at \$603,524. Using the old comparison as a basis, the number was 4867, valued at \$853,276, as compared with 3978, valued at \$1,142,810, in December.

Machinery Exports from the United States
(By Value)

	January, 1926	January, 1925	Seven Months Ended January, 1926	January, 1925
Locomotives	\$897,758	\$810,401	\$4,579,765	\$4,867,782
Other Steam Engines	90,477	116,174	792,592	914,806
Boilers	185,622	65,272	1,112,656	1,064,076
Accessories and Parts	132,670	125,139	1,334,392	1,121,008
Automobile Engines	956,283	1,071,093	6,585,079	3,227,838
Other Internal Combustion Engines	789,030	963,787	4,385,566	6,520,462
Accessories and Parts for	270,458	287,745	2,285,308	1,818,426
Electric Locomotives	88,954	139,769	642,412	1,330,400
Other Electric Machinery and Apparatus	640,089	732,117	4,184,992	4,430,357
Excavating Machinery	357,089	193,896	3,008,250	1,210,465
Concrete Mixers	57,735	52,508	503,897	377,178
Road Making Machinery	168,734	81,731	885,559	604,077
Elevators and Elevator Ma- chinery	166,488	235,529	1,175,523	1,149,794
Mining and Quarrying Ma- chinery	1,511,640	1,118,799	7,043,146	7,726,662
Oil-Well Machinery	1,821,354	526,563	7,329,756	3,626,690
Pumps	518,753	615,893	3,641,005	4,042,747
Lathes	205,060	87,753	1,686,963	788,680
Boring and Drilling Machines	52,927	64,466	353,657	432,526
Planers, Shapers and Slotters	26,512	79,083	243,214	259,665
Bending and Power Presses	66,802	57,470	369,135	532,952
Gear Cutters	15,383	60,520	417,820	244,646
Milling Machines	81,336	129,582	878,004	551,082
Thread Cutting and Screw Machines	54,908	64,748	703,682	33,698
*Forging Machinery	61,578	13,287	170,309	153,493
Sharpening and Grinding Ma- chines	122,307	174,696	1,281,040	1,145,196
Other Metal Working Ma- chinery and Parts of	449,307	382,169	2,649,699	2,404,509
Textile Machinery	1,255,855	900,840	7,498,304	5,231,644
Sewing Machines	521,790	588,608	4,815,356	4,221,814
Shoe Machinery	112,025	110,857	727,050	910,425
Flour-Mill and Gristmill Ma- chinery	64,332	64,468	485,472	438,067
Sugar-mill Machinery	204,489	513,709	6,117,392	7,161,378
Paper and Pulp Mill Machinery	262,452	88,537	1,299,116	1,077,293
Sawmill Machinery	61,104	57,431	478,318	409,898
Other Woodworking Machinery	115,262	121,275	826,620	769,798
Refrigerating and Ice Making Machinery	251,405	122,123	1,709,449	1,064,648
Air Compressors	393,761	323,172	2,359,061	1,701,694
Typewriters	1,794,769	1,691,957	10,512,497	8,995,239
Power Laundry Machinery	100,619	101,345	543,663	546,529
Typesetting Machines	361,812	391,337	2,079,640	2,030,638
Printing Presses	711,143	337,649	2,847,425	2,819,166
Agricultural Machinery and Implement	8,451,370	4,595,268	50,359,190	31,430,008
All Other Machinery and Parts	10,239,251	8,634,315	77,955,469	59,018,891
Total	\$34,590,693	\$26,893,081	\$228,851,343	\$178,706,345

*Previous to January, 1926, classified as "power hammers."

Locomotives to the value of \$897,758 were exported in January, Canada taking 16, valued at \$275,021. For the seven months ended with January, locomotives exported to Canada numbered 47, and were valued at \$881,442. Locomotives shipped to Cuba in January numbered four, and were valued at \$74,450, and for the seven months the number was 44, with a value of \$898,607. Mexico took eight locomotives, valued at \$54,205, in January, and 17, valued at \$112,735, during the seven months. Brazil took eight locomotives, valued at \$176,237, in January, and for the seven months took 32, valued at \$656,704.

Shipments of sewing machines to Mexico in January amounted to 3145, with a value of \$115,943, while for the seven months sewing machines shipped to Mexico numbered 19,226, with a value of \$619,473. Sewing machines shipped to the United Kingdom in January numbered 404, with a value of \$26,264, while for the seven months the number was 24,903, valued at \$979,551.

Shipments of typewriters to the United Kingdom in January numbered 7858, with a value of \$438,754, and for the seven months the number was 39,623, with a value of \$2,163,906. France ranked second in pur-

United States Metal-Working Machinery Exports

	January, 1926		December, 1925	
	No.	Value	No.	Value
Lathes	144	\$205,060	177	\$314,305
Boring and drilling ma- chines	262	52,927	89	43,712
Planers, shapers and slotters	271	26,512	19	30,014
*Bending and power presses	...	66,802	67	58,568
Gear cutters	94	15,383	14	32,824
Milling machines	50	81,336	72	108,036
Thread cutting and screw machines	47	54,908	75	100,579
*Forging machinery	...	61,578	30	27,704
Sharpening and grinding machines	86	122,307	100	244,917
Chucks for machine tools	2,090	20,702	1,460	23,250
Pneumatic portable tools	1,883	145,761	1,875	158,901
Total	4,867	\$853,276	3,978	\$1,142,810

*Beginning with January, 1926, exports are stated by weight rather than number.

**Formerly classified as power-hammers; now stated by weight.

*Exports of Power-Driven Metal-Working Machinery

	January, 1926	
	Number	Value
Engine lathes	58	\$106,461
Turret lathes	3	2,423
Other lathes	83	96,176
Vertical boring mills and chucking machines	9	6,139
Thread cutting and automatic screw machines	47	54,908
Knee and column type milling machines	5	28,291
Other milling machines	45	53,045
Disk-type gear-cutting machines	94	15,383
Vertical drilling machines	20	17,499
Radial drilling machines	2	3,000
Sensitive drilling machines	58	1,461
Other drilling machines	75	24,828
Shapers and slotters	16	14,035
Planers	269	25,309
External cylindrical machines	43	53,726
Internal grinding machines	43	68,581
Metal-working tool-sharpening machines	47	32,259
Total	917	\$603,524

*The Bureau of Foreign and Domestic Commerce has greatly changed the classification for machinery exports, beginning with January, 1926. The outstanding revision concerns metal-working machine tools classified under the heading "Power-Driven Metal-Working Machinery." The general classifications heretofore given the various products have been divided into more specific items. Lathes have been divided into three classes, "engine," "turret" and "other." "Boring and drilling machine tools" have been divided into "vertical boring mills and chucking machines," "radial drilling machines," "sensitive drilling machines" and "other drilling machines." "Planers, shapers and slotters" have been divided into "shapers and slotters" and "planers," while "bending and power presses" have been broken into the classifications of "sheet-metal-working machines" and "plate-metal-working machines," but are not shown in the machine tool table, because exports are now given by quantity rather than by number. "Gear cutters" have been divided into "disk-type gear-cutting machines" and "milling machines" have been divided into "knee and column type milling machines" and "other milling machines." "Sharpening and grinding machines" have been divided into "external cylindrical grinding machines" and "internal cylindrical grinding machines."

chases of American typewriters in January, taking 3169, valued at \$183,890, while for the seven months the number was 16,582, with a value of \$971,288.

Harvesters and binders shipped in January numbered 3132, with a value of \$610,954, while for the seven months the number was 10,697, with a value of \$2,142,405. France was the chief destination of exports of this class of American farming implements in January, taking 2208, with a value of \$404,773, while for

United States Exports and Imports of Machinery

	Exports of Machinery	Imports of Machinery	Exports of Metal-Working Machinery
The year 1924...	\$317,040,424	\$9,711,618	\$8,644,444
1925			
January	28,117,952	803,829	845,986
February	23,215,776	814,703	707,445
March	35,962,076	999,237	1,364,930
April	36,033,980	1,167,099	1,245,634
May	32,164,865	861,655	1,230,914
June	28,746,061	935,487	1,003,325
Fiscal year	338,715,075	10,404,337	10,776,079
July	32,320,533	905,872	1,188,069
August	38,768,823	747,912	1,308,372
September	30,719,342	956,250	989,379
October	31,271,007	996,557	905,826
November	30,084,814	876,113	1,007,376
December	37,933,511	1,448,316	1,155,660
The year 1925...	385,376,676	11,577,911	13,052,916
1926			
January	34,590,693	1,659,971	853,276

Imports of Machinery Into the United States

	(By Value)		Seven Months Ended January	
	January 1926	January 1925	1926	1925
Metal-working machine tools	\$42,024	\$20,773	\$222,054	\$148,520
Agricultural machinery and implements	238,545	172,297	1,393,772	1,190,343
Electrical machinery and apparatus	91,928	99,319	598,226	1,090,197
Other power generating machinery	115	438	4,319	5,071
Other machinery	1,106,546	385,427	4,263,105	2,346,901
Vehicles except agricultural	180,813	125,575	1,169,829	841,411
	\$1,659,971	\$803,829	\$7,651,305	\$5,622,443

the seven months France took 3840, with a value of \$498,805.

Exports of power-driven metal-working machinery, as prepared under the new classification, were valued at \$1,213,110 in January, 1926, as against \$1,181,452 in January, 1925. For the seven months ended January, 1926, this class of exports was valued at \$10,279,136, compared with \$7,374,177 for the corresponding period of the previous year.

For Promotion of Aeronautics

Trustees of the Daniel Guggenheim Fund for the promotion of aeronautics have issued a tentative report on their proposed program. The general purposes involve education, scientific research, commercial development and the dissemination of educational information.

Harry F. Guggenheim is president of the fund and Rear Admiral Hutch I. Cone, U. S. N., retired, is vice-president and treasurer. The other members include F. Trubee Davison; Dr. William F. Durand, late president American Society of Mechanical Engineers and chairman of the advisory committee for aeronautics of the Council for National Defense; General George W. Goethals, builder of the Panama Canal; Prof. A. A. Michelson; Dwight W. Morrow of J. P. Morgan & Co.; Elihu Root, Jr.; John D. Ryan and Orville Wright. Offices of the fund are maintained at 120 Broadway, New York.

Largest Steel Furniture Shipments in More Than a Year

WASHINGTON, March 2.—Based on reports from 32 companies in the "business group," orders received for steel furniture in January were valued at \$2,652,208, data for one concern being estimated. Shipments were valued at \$2,434,205 and unfilled orders at \$1,760,573. All three items were the largest in more than a year. December orders were valued at \$2,454,277; shipments at \$2,418,577 and unfilled orders at \$1,760,573.

In the shelving group January orders were valued at \$580,948; shipments, \$577,364, and unfilled orders, \$583,415. When compared with December, reductions were shown in orders and shipments, the former being valued at \$620,947 and the latter at \$788,461. Unfilled orders in January showed an increase over December, when the value was \$570,941.

Canadian Iron and Steel in January

TORONTO, ONT., Feb. 27.—A report issued by the Dominion Bureau of Statistics states that the January production of coke pig iron in Canada amounted to 56,644 gross tons, an increase of 3 per cent over the 54,889 tons of December. On Jan. 31 there were five furnaces in blast, the same number as in December. The active furnaces had a daily capacity of 1825 tons per day or about 36 per cent of the total. Production of ferroalloys at 2224 tons was 26 per cent under the 3008 tons of December but showed little change from the average monthly production in 1925 of 2142 tons. The January output consisted mostly of the grade having a high manganese content, but small quantities of ferrosilicon were also produced.

At 68,536 tons, the January production of steel ingots and castings in Canada showed an increase of 10 per cent over the 62,353 tons of December and a similar increase over the average monthly output of 63,000 tons in 1925. Pig iron prices at Montreal were higher in January, both No. 1 and No. 2 foundry being at \$29.25 as compared with \$28.75 in December. At Toronto, prices were unchanged, No. 1 foundry being quoted at \$26.85 and No. 2 at \$26.35. The bureau's index number for iron and its products (prices in 1913 = 100) was slightly higher, having risen from 147.3 in December to 147.5 in January.

Magnesite in 1925

Statistics compiled by J. M. Hill, United States Bureau of Mines, show that the production of crude magnesite, mined in the United States in 1925, was 120,660 net tons, valued at \$1,432,700. Six operators at seven mines in four counties in California produced 64,600 tons of magnesite, valued at \$872,100, all of whom reported only fair business, due to foreign competition. All of the output in Washington was from the mines of one magnesite company, which operated only one of its six furnaces at Chewelah, Stevens county. In 1924, the domestic output was 120,100 tons and in 1920 it was 303,767 tons.

Imports of magnesite in 1925 were 143,440 tons compared with 148,700 tons in 1924 and 63,110 tons in 1920.

From a tabulation of the best information available the total production of crude magnesite from California mines from the beginning of the industry in 1886 to 1925, inclusive, 40 years, has been 1,041,450 tons, valued at \$10,146,640. Washington, since the beginning of mining in 1916, has produced 764,610 tons, valued at \$5,111,850. The total production of crude magnesite produced in the United States for the same 40 years is 1,806,060 tons, valued at \$15,258,490.

Increased activity in railroad repair shops is reported from Buffalo. On March 1 the Lackawanna Railroad car shops at East Buffalo advanced from a three day a week basis to five days a week. Other railroad repair shops, it is added, are expected to increase the rate of operation.

Where Steel Exports Went in July-January

Canada Took 209,771 Tons of Nine Leading Items in Seven Months—Japan Retains Second Position with 53,904 Tons of Nine Items, Followed by Cuba with 37,311 Tons

Exports from United States, by Countries of Destination

(In Gross Tons)

	Steel Plates				Galvanized Sheets				Black Steel Sheets			
	January		Seven Months		January		Seven Months		January		Seven Months	
	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925
Total	9,102	5,095	59,724	37,450	16,408	28,326	87,963	84,400	13,638	9,248	71,560	74,351
Canada	8,436	4,640	50,391	29,194	2,464	1,010	13,281	7,764	3,482	2,583	25,759	17,260
Japan*	27	1	76	394	1,256	446	3,229	7,608	8,071	6,269	34,585	51,518
Cuba	58	9	1,005	671	1,056	544	8,121	6,037	37	14	633	383
Philippine Islands	50	4	424	848	3,029	2,099	11,288	6,539	.....	.....	.....	445
Mexico	61	112	974	442	783	309	4,592	4,007	.....	98	.....	286
Argentina	26	.....	502	.....	563	20,206	4,044	30,907	101	31	559	562
Chile .....	.....	.....	.....	.....	433	399	1,479	939	.....	.....	.....	.....
Colombia .....	.....	.....	.....	.....	981	902	5,116	3,739	.....	.....	.....	.....
Central America .....	.....	.....	.....	.....	.....	262	.....	2,670	.....	.....	.....	.....
	Steel Rails				Barbed Wire				Plain and Galvanized Wire			
	January		Seven Months		January		Seven Months		January		Seven Months	
	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925
Total	9,198	10,567	85,291	115,458	5,442	6,053	39,384	54,220	2,591	3,086	19,050	15,544
Canada	848	465	13,015	8,115	124	63	963	3,843	975	1,094	6,662	4,149
Japan*	142	804	7,392	4,378	.....	.....	.....	.....	163	188	493	518
Cuba	767	1,994	14,816	35,452	309	530	2,070	4,201	109	220	934	950
Philippine Islands .....	.....	200	2,325	3,390	607	108	1,829	491	19	9	67	42
Mexico .....	.....	151	1,701	2,276	511	413	2,563	3,001	232	270	2,955	2,240
Argentina .....	.....	.....	.....	.....	162	296	4,859	3,988	182	94	1,250	387
Chile	1,216	235	3,532	2,448	.....	55	.....	75	3	9	35	54
Colombia	1,142	36	3,299	4,386	563	627	3,748	4,761	77	96	196	122
Brazil	43	39	3,750	4,508	954	1,659	6,170	18,444	180	107	809	1,320
Honduras .....	.....	201	331	1,025	.....	.....	.....	.....	.....	.....	.....	.....
Australia .....	.....	.....	.....	.....	.....	163	267	1,669	307	.....	1,483	1,486
British S. Africa	59	5,153	.....	22,142	491	644	1,118	2,780	.....	179	.....	179
	Tin Plate				Plain Heavy Structural Material				Steel Bars			
	January		Seven Months		January		Seven Months		January		Seven Months	
	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925
Total	21,143	19,416	64,747	82,077	10,049	6,851	71,121	62,285	11,070	8,469	67,247	49,447
Canada	3,258	2,022	18,378	11,532	7,176	.....	54,855	48,158	7,683	.....	41,587	19,734
Japan*	7,272	7,464	29,025	41,037	.....	.....	94	2,207	422	.....	763	1,391
Cuba	185	366	2,234	3,356	405	.....	5,874	7,733	217	.....	3,673	7,111
Mexico	454	276	2,798	2,174	.....	.....	.....	.....	.....	.....	.....	.....
Argentina	1,054	2,123	3,668	5,190	.....	.....	.....	.....	.....	.....	.....	.....
Chile	344	549	3,827	2,393	190	.....	1,085	2,955	.....	.....	.....	.....
China	1,825	136	13,733	2,013	.....	.....	.....	.....	.....	.....	.....	.....
British India	4,031	.....	9,341	1,196	.....	.....	.....	.....	.....	.....	.....	.....
Italy .....	.....	1,199	883	2,069	.....	.....	.....	.....	.....	.....	.....	.....

*Including Chosen.

Exports of Iron and Steel Products from the United States by Countries During January, 1926

(In Gross Tons)

Belgium	384	Brazil	2,738
Denmark and Faroe Islands	26	Chile	7,611
Finland	3	Colombia	7,219
France	2,280	Ecuador	54
Germany	12	Falkland Islands	1
Greece	88	British Guiana	3
Italy	904	Dutch Guiana	96
Lithuania	1	Peru	4,759
Netherlands	71	Uruguay	475
Norway	226	Venezuela	6,944
Portugal	13	South America	39,167
Rumania	454	British India	5,891
Soviet Russia	2,698	British Malaya	1,250
Spain	61	Ceylon	1
Sweden	21	China	3,025
Switzerland	6	Java and Madura	453
Turkey	49	Other Dutch East Indies	3,491
United Kingdom	3,179	Hongkong	43
Europe	10,476	Iraq	31
Canada	54,966	Japan, including Chosen	21,628
British Honduras	9	Kwantung leased territory	10
Costa Rica	250	Palestine	3
Guatemala	3,969	Philippine Islands	5,466
Honduras	264	Siam	2
Nicaragua	339	Syria	1
Panama	1,208	Asia	11,295
Salvador	3,460	Australia	1,621
Mexico	6,291	British Oceania	4
North America	70,758	French Oceania	2
Newfoundland and Labrador	64	New Zealand	211
Bermuda	5	Oceania	1,838
Barbados	6	Belgian Congo	1
Jamaica	136	British South Africa	985
Trinidad and Tobago	523	British West Africa	7
Other British West Indies	84	Egypt	207
Cuba	7,191	Other French Africa	4
Dominican Republic	487	Liberia	23
Dutch West Indies	156	Morocco	49
Haitian Republic	780	Portuguese East Africa	137
Virgin Islands of United States	208	Africa	1,473
American Islands	9,638	Total	174,585
Argentina	9,182		
Bolivia	85		

Trade Changes

The Union Drawn Steel Co., Beaver Falls, Pa., has changed the location of district offices as follows: New York office, now room 1506 Tower Building, 200 Madison Avenue; Philadelphia office, now room 939, Insurance Co. of North America Building, 1600 Arch Street; Chicago office, now room 1915 Tribune Tower, Michigan Boulevard. These changes were made necessary by the fact that the company has closed its warehouses in those cities, believing that the class of business formerly handled by these warehouses should go to jobbers.

F. H. Crawford & Co., machine tools, 299 Broadway, New York, is moving to 50 Church Street, New York.

Pittsburgh Reinforced Brazing & Machine Co., Pittsburgh, manufacturer of "Kerotest" valves and fittings, has changed its corporate title to Kerotest Mfg. Co., effective March 1.

The American Hoist & Derrick Co., Saint Paul, Minn., has opened branch office at 1943 Railway Exchange Building, St. Louis, with Ward B. Maurer in charge. Mr. Maurer has a wide acquaintanceship among railroad men and users of hoisting machinery. Before joining the sales force of the American Hoist & Derrick Co., several years ago, he was a member of the engineering staff of the Baltimore & Ohio Railroad.

W. B. Yost, mill supplies, for many years connected with Cleveland and Youngstown mill supply houses, but who in recent years has been on the Pacific Coast, will represent the Bond Foundry & Machine Co., Manheim, Pa., manufacturer of power transmission machinery, truck casters, roller bearings and other specialties; Charles Bond Co., 617 Arch Street, Philadelphia, manufacturer of standard stock gears, Bondaron leather specialties and Grundy patent flexible insulated couplings; and Christiana Machine Co., Christiana, Pa., manufacturer of water turbines. Mr. Yost will be located at 37 Hermosa Street, Long Beach, Cal. The Bond Canadian trade is looked after by the Bond Engineering Works, Toronto.

Climax Engineering Co., Clinton, Iowa, has appointed the Rapp-Huckins Co., Inc., 59 Haverhill Street, Boston, as district representative for the sale of industrial power houses and engines. During the past 25 years the Rapp-Huckins Co. has handled marine and industrial engines.

Burnside Steel Foundry Co. is the name recently adopted by the Burnside Steel Co., Ninety-second Street and Kimbark Avenue, Chicago. No change in ownership, management or officers is involved, the name being changed to describe better the company's product, which is steel castings.

Anderson Engine & Foundry Co., Anderson, Ind., has elected the following officers: E. W. Cooney, president and general manager; L. P. Pence, vice-president; I. E. May, secretary, and Bert McBride, treasurer. Directors include the officers and Harold Taylor, Indianapolis; Emerson E. McGuff, Portland, Ind.; and Frank C. Hesch, Titusville, Pa.

The Union Tank Car Co. will move its general offices from New York to Chicago about Oct. 1. This company has leased two floors in the Metropolitan Building, at the southwest corner of LaSalle and Randolph Streets.

The Cutler-Hammer Mfg. Co., Milwaukee, has opened a new sales office in the Healey Building, Atlanta. This office will take care of the trade in North and South Carolina, the eastern section of Tennessee, Georgia, Florida, southern Alabama and Mississippi. A. C. Gibson, formerly of the Philadelphia office, is in charge. The General Machinery Co., Birmingham, will continue to serve the trade in the northern half of Alabama.

The Kingsbury Mfg. Co., Keene, N. H., manufacturer of automatic drilling machinery, has appointed the Syracuse Supply Co. as exclusive representative in Syracuse, Rochester and Buffalo territories. The Kingsbury Mfg. Co. has appointed the Millholland Sales & Engineering Co., Indianapolis, as exclusive representative in Indiana territory.

The Climax Engineering Co., Clinton, Iowa, has appointed the Briggs-Weaver Co., Dallas, Tex., as district representative to handle Climax engines for industrial purposes. The Clark Machine Co., Wichita Falls, Tex., has been appointed representative for the sale of the Climax engine for oil-drilling purposes and will operate exclusively in the oil field. The Petroleum Electric Co., Tulsa, Okla., has taken on the sale of Climax engines. P. J. Dasey, Wells Hotel, Tulsa, in charge of the Southwestern sales territory, will supervise the sales of these new Climax engine dealers.

B. Nicoll & Co., distributors of Pont-à-Mousson cast iron pipe, have opened an office in the W. M. Garland Building, 117 West Ninth Street, Los Angeles, which will be operated as a branch of the San Francisco office. The company has also appointed the Pacific Water Works Supply Co., Arcade Building, Seattle, as its selling agent for cast iron pipe and fittings in Washington and Oregon.

Effective March 1, the New York office of the Ashland Fire Brick Co., Ashland, Ky., is removed from 50 Church Street to 110 East Forty-second Street.

Present officers and directors of the Aluminum Co. of America were reelected at the annual meeting of the company. The officers are Arthur V. Davis, president; G. R. Gibbons, vice-president and secretary; R. E. Withers, vice-president and treasurer; E. S. Fickes, R. A. Hunt, E. K. Davis, C. H. Moritz and W. P. King, vice-presidents. Retiring directors reelected were G. H. Clapp, A. V. Davis, D. L. Gillespie, R. A. Hunt, A. K. Lawrie and R. B. Mellon.

At a recent meeting of the board of directors of the Milwaukee Electric Crane & Mfg. Corporation, Milwaukee, Andrew Montgomery was elected president, Theodore Trecker and Henry S. Wright, vice-presidents, and A. J. Pitman, secretary and treasurer. These officers, with Henry M. Thompson, compose the board of directors. M. A. Beck continues as consulting engineer.

L. F. Grammes & Sons, Inc., Allentown, Pa., manufacturer of metal specialties, signs, name plates, stampings, advertising specialties, etc., announces removal of the New York office from the Fisk Building to larger quarters at 25 West Forty-third Street, Suite 914 and 915. H. B. Eccleston is New York manager.

The National Enameling & Stamping Co., Inc., Granite City, Ill., has opened district sales offices at 808 Fidelity Bank Building, Memphis, Tenn., with F. A. Ernst in charge. All company products, including black, galvanized and blue annealed sheets, tin plate and plates will be handled by Mr. Ernst, who was formerly district sales manager for the Falcon Steel Co. at Chicago.

Allis-Chalmers business in Continental Europe will be handled through an organization recently incorporated as Allis-Chalmers (France), with headquarters at 3 Rue Taitbout, Paris. H. I. Keen, who has been manager of European sales through the company's district office in Paris, will be the managing director of the new organization. The company has maintained for many years an office in London, at 728 Salisbury House, London Wall, E. C. 2.

The Los Angeles office of the Bethlehem Steel Co. has been moved from the Washington Building to 922 Pacific Finance Building. Leigh B. Morris is sales agent in charge of the Los Angeles office.

Effective Feb. 23, the general offices of the Commonwealth Steel Co. will be located in the office building at the plant in Granite City, Ill. The general offices previously were in the Pierce Building, St. Louis.

At the stockholders' meeting of the Bridge & Beach Mfg. Co., manufacturer of stoves, ranges and furnaces, 4204 North Union Boulevard, St. Louis, Jan. 19, the following directors were reelected: Hudson E. Bridge, L. H. Boech, Henry C. Hoener, John F. Shepley, Louis H. Riecke, Laurence D. Bridge and George Leighton Bridge. The board elected the following officers: Hudson E. Bridge, chairman of the board; L. H. Boech, president and manager; Henry C. Hoener, vice-president; Laurence D. Bridge, vice-president; George Leighton Bridge, vice-president; A. F. Gammett, treasurer; Louis H. Riecke, secretary.

The Pulmosan Safety Equipment Corporation, Brooklyn, N. Y., has moved from 45 Willoughby Street to larger quarters at 386 Jay Street.

New Warehouse of John Simmons Company Completed

The new warehouse of the John Simmons Co., wrought iron and steel pipe, 110 Centre Street, New York, has just been completed in Long Island City. The building which is of six stories adjoins the pipe yard and shops at Nelson Avenue, Manley, Orton and Anable Streets and contains about 80,000 sq. ft. of floor space. It was designed and the construction supervised by Y. M. Karekin, 136 Liberty Street, New York.

With the opening of the new warehouse, cars will be switched on to a private siding large enough for 12 to be unloaded into the building. There are two elevators and three electric cranes for handling material on the various levels. Loading platforms provide space for handling 12 trucks at once, four of which are inside the building, so that the delivery department can load after closing hours and the trucks will be ready for delivery in the morning. There is a spiral chute from the fourth to the first floor, down which small material may be shot to the loading platforms.

Industrial Finance

The M. A. Hanna Co., Cleveland, reports a marked improvement in its earnings for 1925. Bank loans amounting to \$4,600,000 were wiped out and substantial reductions were made in the funded debt and in the Hanna Furnace Co. liability. The net income after interest, but before Federal taxes and depreciation, was \$1,549,447, against a loss of \$437,407 in 1924. After deduction of \$1,365,242 for depreciation and \$60,870 for Federal taxes, there is a balance of \$123,294 as compared with a deficit of \$1,651,572 the year before.

The Lake Erie Bolt & Nut Co., Cleveland, reports net profits for the year of \$132,644. This is after deducting \$185,034 for ordinary expenses, repairs, maintenance and Federal taxes, \$43,026 for depreciation and \$9,363 for interest. A deficit of \$3.69 per share in 1924 on the 600,000 shares outstanding was turned into a profit of \$2.20 a share. The company, which had notes payable amounting to \$350,000 in 1922, has wiped off all bank loans. Its current assets and current liabilities are in a 4 to 1 ratio.

The Billings & Spencer Co., Hartford, Conn., drop forgings, last year did a gross business of \$2,500,000, and for the first time since 1919 operated at a profit. The company's surplus account was increased \$33,000. On March 1 the first allotment of the company's bonds, amounting to \$50,000, will be taken up. Directors elected for the ensuing year are: F. C. Billings, Lucius F. Robinson, L. Edmund Zacher, Morgan G. Bulkeley, Jr., Charles D. Rice, David J. Post, Edward Milligan, M. S. Little, John J. McKeon, H. M. Sperry and Shiras Morris.

Annual report of the Virginia Iron, Coal & Coke Co. for 1925 shows \$68,400 added to surplus, after paying dividends on preferred stock, but without any dividends on common stock. Gross revenue was \$3,730,960; operating expenses, \$3,175,510; fixed charges, including bond interest and taxes, \$362,153. Gross profits for the year, after inventory adjustments, became \$193,298. None of the company's blast furnaces was operated during the year, "for it was evident that under the existing market conditions they could not be operated at a profit." The general balance sheet shows assets of \$18,751,085 and a profit and loss surplus of \$344,059.

The Otis Steel Co., Cleveland, has announced refinancing plans which include an issue of \$12,000,000 more first-mortgage 15-year, 6 per cent sinking fund bonds, series A, which are being offered by several banks and investment houses. These are being placed on the market at 98½. These bonds will be used to refund the outstanding 7½ and 8 per cent first-mortgage bonds amounting to \$8,750,000, to pay off \$1,000,000 in bank indebtedness and to provide additional working capital. In addition to this financing, the company will submit a proposal to its stockholders for an exchange of the existing preferred stock for new 7 per cent prior preference stock on a basis of 1.315 shares of new stock for each share of existing preferred stock, upon which there are accrued and unpaid dividends amounting to 31½ per cent. The company's assets are placed at \$31,665,800 after deducting various reserves. The adjusted balance sheet of Dec. 31 shows a ratio of current assets to current liabilities of 3.34 to 1. Net profits for 1925, after allowing for depreciation, were \$2,263,462, or about 3.15 times the interest charges on the new bonds. Improvements involving an expenditure of \$800,000 were authorized recently by the directors.

The Electric Controller & Mfg. Co., Cleveland, reports that its net earnings during 1925, after preferred dividends and other charges, except Federal taxes, were equivalent to \$10.40 per share of common stock, as compared with \$7.90 in 1924. Shipments during the last six months of the year were 47 per cent greater than during the corresponding period of the year before.

The Truscon Steel Co., Youngstown, Ohio, is preparing to double its capacity for welded wire fabric and has installed a department for the manufacture of pole line hardware. Gross sales last year of \$27,658,690 were the largest in the company's history, and compare with \$10,000,000 in 1921. "We have before us one of the busiest years of our career," President Julius Kahn informed stockholders at the annual meeting Feb. 23 in Detroit. He believes the possibilities of furnishing steel products for ordinary residential construction are growing rapidly. Nineteen twenty-five was the best year in the company's history. Net earnings, after charges, depreciation, Federal taxes and dividends on preferred stock, were equivalent to \$3.55 per share on the common stock of \$10 par value. Surplus at the end of 1925 was \$3,484,101, comparing with \$2,232,378 the previous year. The company is extending its plant at Youngstown by the addition of five acres of buildings, to house the General Fireproofing building products and to take care of other new departments. It has at present invested, in the net quick assets of the general fireproofing building products, a subsidiary, \$858,184.

Annual report for 1925 of the Caterpillar Tractor Co., San Leandro, Cal., shows assets and liabilities amounting to \$15,577,879, of which surplus is listed at \$8,096,261. Quick assets amount to \$10,159,707 and current liabilities to \$981,618. Net sales for the year were \$20,859,842 and earnings before interest and Federal taxes \$4,457,560, which is more than twice the \$1,724,125 earned in 1924.

Gross sales of the Graton & Knight Mfg. Co., Worcester, Mass., belting, last year were \$8,500,000, or about \$1,250,000 larger than those for 1924. Net income after depreciation, interest and taxes, amounted to \$341,000. Following a reorganization of the company, now in the initial stages, there will be approximately \$2,100,000 preferred stock outstanding. Last year's earnings were equivalent to better than \$15 a share on this amount of stock.

Foote Brothers Gear & Machine Co., 213 Curtis Street, Chicago, shows net earnings last year of \$141,712, equal to \$1.07 a share on common stock, compared with \$137,452 or \$1.02 a share in 1924. Operating profit of \$250,358 last year compares with \$212,713 in 1924, and profit and loss surplus of \$310,912 compares with \$305,200 the year before. Current assets exceed current liabilities six to one and net working capital at the end of the year was \$544,256, against \$516,334 at the end of 1924.

The Chicago Railway Equipment Co. balance sheet, Dec. 31, shows a surplus of \$1,249,606, as compared with \$1,479,138 at the end of 1924, indicating that the company had a deficit of \$229,532 in 1925 after paying regular dividends of \$209,774 on preferred stock and \$179,808 on the common stock. E. B. Leigh, president, says the management will recommend to the directors that the \$3 dividend rate on the common stock be continued through 1926.

The Fagan Iron Works went into voluntary receivership on Feb. 8, listing assets of \$1,300,000 and liabilities not exceeding \$450,000. Vice-Chancellor Bentley named William H. Cane and James Mitchell receivers and ordered them to continue the business. John J. Fagan, general manager and largest individual stockholder, explained that the receivership was sought to forestall petty suits that might result from the cash of the company being tied up in large contracts now being filled.

Annual report of the Railway Steel-Spring Co. shows 1925 net earnings from all sources, after depreciation and taxes, of \$2,348,245. Dividends of 7 per cent on preferred stock amounted to \$945,000; of 10 per cent on common stock, to \$1,350,000. The surplus for the year, after dividends, was \$53,245, while the total surplus became \$13,956,958. Assets and liabilities are reported at \$42,181,758, of which current assets are \$11,848,048 and current liabilities \$341,379.

Annual report for 1925 of the Richmond Radiator Co., 1480 Broadway, New York, shows assets and liabilities amounting to \$4,669,501, of which current assets are \$1,953,775 and current liabilities \$309,934. Net profit for the year was \$525,468, and surplus at the end of the year was \$1,079,630. At the annual meeting, Feb. 16, Floyd W. Parsons, Hamilton Pell and Francis E. Smith were re-elected directors for three years. Officers of the company are W. G. Langford, president; A. H. Schroth, vice-president; H. N. Kelley, secretary-treasurer, and N. St. Peter, assistant secretary-treasurer.

Report of the Midland Steel Products Co. for 1925 shows profit of \$3,149,773 after interest and depreciation, but before Federal taxes, against \$2,077,481 in 1924. Net current assets at end of December were \$5,392,441, an increase of \$1,669,761 over 1924, and of \$2,173,447 over 1923. During 1925 the company paid 8 per cent on preferred and \$4 on common, also participating dividends of \$3 on preferred and \$1.32 on common stock. During the year \$2,298,480 of the \$2,500,000 first mortgage bonds were converted into preferred stock.

The By-Products Coke Corporation, Syracuse, N. Y., attributes largely increased earnings in 1925 to plant improvement, a high grade of efficiency and readjustment of contracts. C. D. Caldwell, president, stated that the company received for its products in 1925 the lowest prices in 10 years.

Annual report of the Pressed Steel Car Co. showed a falling off in net income for 1925, the total having been \$1,532,635, against \$2,085,111 in 1924. After deducting depreciation, maintenance, etc. net income was \$939,050 against \$1,179,356 in 1924. Net income was 7.51 per cent on \$12,500,000 of preferred stock outstanding, against 9.43 per cent in 1924. Preferred dividends of 7 per cent were paid each year, but no common dividends were paid in 1925. Net current assets of \$17,530,524 and net current liabilities of \$3,108,783, on Dec. 31, leave a working capital of \$14,421,751, against \$13,465,936 at the close of 1924. Profit and loss surplus remains virtually unchanged, being \$14,286,478 at the end of 1925.

European Ententes in Prospect

International Rail Syndicate and Negotiations for East European Steel Merger Show Progress

BERLIN, GERMANY, Feb. 16.—Syndicates and proposed mergers and agreements are still outstanding features of the German and in fact most of the European iron and steel markets. Negotiations are still under way with works in the Saar toward their entering the German Raw Steel Syndicate. An obstacle is the continued refusal of the Saar mills to permit regulation of their export production other than the portion shipped directly into Germany.

Actual creation of the Western Steel Trust is still in the future. The "study corporation" with a nominal capital of 50,000 m. is in existence and discussion is understood to be progressing favorably, although the financing of the trust has not yet been arranged. Current reports are that eventually the corporation may include in addition to its present members, the Krupp, Haniel, Kloeckner and Hoesch interests. Efforts to have the government reduce the merger tax in the special case of the Western Steel Trust have been successful and announcement is made that the "fusion tax" will be reduced to about one-half the schedule. In the financing of the corporation, it has been decided that the American loans contracted or to be contracted by the merging corporations shall be converted into loans to the new corporation. Thus far the Rhine-Elbe Union and the Phoenix A. G. have converted recent financing into loans to the corporation.

The protracted negotiations for revival of the pre-war International Steel Rails Syndicate have resulted in a provisional agreement of German, Belgian and Luxemburg mills to join such a syndicate. Efforts are now under way to bring in French and British mills. Apparently, should the syndicate finally be formed export of rails would be controlled by the

German Raw Steel Syndicate in Germany, the John Cockerill works in Belgium and the "Arbed" works in Luxemburg.

The proposed Franco-German iron and steel agreement is still unconcluded. The so-called "Luxemburg Agreement" made last year, under which Germany was to accept 1,750,000 tons of French, Saar and Luxemburg iron and steel products at half the regular German tariff and in the case of Saar products, duty free, was never put in force, as it depended upon the conclusion of a general Franco-German Commercial Treaty, which would grant concessions to German finished products shipped into France, Luxemburg and the Saar. In the past week, a provisional Commercial agreement was signed, which provides "most favored nation treatment" of French shipment of agricultural products to the agreeing countries and admits German agricultural machinery to France at minimum duties. Motors are not included in the agreement but there is provision for iron, steel and nickel-plated domestic utensils.

An "East European Iron Trust" is being considered, to be participated in by mills in Czechoslovakia, Poland and German East Silesia. The German East Silesian iron and steel industry is in a state of severe depression the only cure for which seems to be development toward the production of more highly manufactured articles. Polish and Czechoslovakian works are at present negotiating for a syndicate or merger and it has been suggested that the German works will profit by joining. The nucleus of such a group would be the Witkowitz Mining & Smelting Co. in Czechoslovakia. The principal obstacle to the formation of such a corporation or syndicate is apparently political, bad relations existing between the German and Polish governments and indifferent relations between Germany and Czechoslovakia.

Another recent merger in Germany is that of the railroad signal manufacturers, the Max Judel Co. and the Deutsche Eisenbahnsignalwerke Co.

Value of Imported Zinc and Steel Chain

WASHINGTON, March 8.—The United States Court of Customs Appeals last week affirmed a judgment of the board of general appraisers overruling the protest of the American Smelting & Refining Co., that certain imported zinc had no commercial value and therefore was not imported merchandise and was not dutiable. The zinc content of the ores was assessed at 1½c. per lb.

The court also affirmed the judgment of the board which overruled a protest of Schneider Brothers & Co., that imported steel chains were of larger diameter measurements than 5/16 in., the basis on which they were assessed for duty, and were dutiable at a lower rate.

Complaints of German Infringements

Some complaints have been received in this country from American representatives abroad of German infringements of American machine tools. So far as is publicly known only one formal complaint has been made by an American machine tool manufacturer and that was a court action prosecuted by the Landis Machine Co., Waynesboro, Pa., against a German company which took out a "Deutsch Landis" trademark in that country. The Landis company won its case in the German courts.

Casting a 100-Ton Ingot Mold in England

A large ingot mold was recently cast at the Openshaw Works of Sir W. G. Armstrong, Whitworth & Co., Ltd., Manchester, England. Some interesting facts are printed in *Engineering* concerning the preparation and pouring of this large 100-ton casting.

The molding and core-making occupied 1580 working hours. The metal necessary amounted to 130 tons. This was transported to the mold in six ladles, the contents of which were poured simultaneously. A period

of 10 min. was required to fill the mold and the feeding of molten iron was continued for 12 hr. The casting was then allowed to cool in the usual way. It is interesting to note that, from temperature readings at the top of the mold which were recorded at intervals, a temperature of 110 deg. Fahr., or 50 deg. above that of the foundry, was noted after 34 days. The difficulties incident to transportation of such a large casting were solved by the London & Northeastern Railway Co., which provided two 60-ton flat bogie cars carrying a girder, each end of which was pivoted on specially prepared platforms placed on the cars. The 100-ton ingot mold was slung on the girder, the girder passing through the hollow part of the mold.

Trade in American Tools in India

Information received by the National Machine Tool Builders' Association reveals that American machine tools are not finding as large a market in India as might be expected. The report of the British Trade Commissioner shows that in 1923-24 the United Kingdom supplied 70 per cent, the United States 15 per cent and Germany nearly 4 per cent. Machine tools account for about 70 per cent of the \$1,000,000 worth of metal working machinery imported by India in the two years. The subject of extending the use of American tools in that market may be discussed at the spring meeting of the association at Providence, R. I., May 6 to 8.

Specifications on structural steel in the Spanish language have now been prepared by the United States Department of Commerce. This is one of the series being developed to provide buying countries with the standards called for under the specifications of the American Society for Testing Materials. The pamphlet copy of the specifications is sold by the Superintendent of Documents, Government Printing Office, Washington.

Machinery Markets and News of the Works

TOOL BUSINESS QUIETER

**In Some Districts Sales Have Slumped
But Buying Is Still Fairly Good**

**Several Railroads Expected to Close on Lists
Soon—New York Central and Pennsylvania Purchase a Few Machines**

ALTHOUGH a slump in machine tool buying is reported from some districts, the volume of business is still fairly good. A good deal of business is pending including several railroad lists, upon which action is expected momentarily. The New York Central and the Pennsylvania have each bought a few tools. The decision of the Interstate Commerce Commission in the Nickel Plate merger was a blow to the expectations of that portion of the tool industry which specializes in railroad equipment, as several of the shops

of the consolidated system were to have been rehabilitated.

Purchases during the week were confined largely to single machines, but there was some buying of larger importance. The Nash Motors Co. bought considerable production and standard shop equipment for its plants at Kenosha, Racine and Milwaukee. The Pratt & Whitney Aircraft Corporation, Hartford, Conn., is equipping for the manufacture of airplane engines and has bought a part of the necessary tools. A Beaumont, Tex., company has expended about \$40,000 for turret lathes, engines lathes and shapers for oil well repair shops. New England buying has been notably better, two purchases totaling more than \$50,000 standing out in what has been a rather quiet market.

Automobile companies have not been very active in the market in the past few weeks, but purchase of about 25 special lathes by the Buick Motor Co., Flint, Mich., is expected.

New York

NEW YORK, March 5.

MACHINE tool buying continues in fairly good volume, although perhaps it has not shown the promise that it did a week or so ago. Some of the largest buying of the past week has been done by the Pratt & Whitney Aircraft Corporation, Hartford, Conn., which is equipping a plant for the building of airplane engines. Miscellaneous business of the week includes the following orders: Wildman Mfg. Co., Norristown, Pa., vertical profiling machine; Brown & Sharpe Mfg. Co., Providence, R. I., two 13-in. geared head lathes; Ingersoll-Rand Co., Phillipsburg, N. J., vertical surface grinder; International Motor Co., New Brunswick, N. J., worm grinder; Rolls-Royce Co., Springfield, Mass., worm grinder; Moore Drop Forging Co., Springfield, Mass., four automatic milling machines; Edward G. Budd Mfg. Co., Philadelphia, two vertical surface grinders. The New York Central, which has sent out a good many inquiries since the first of the year, also bought several tools.

Plans have been filed by the New York Edison Co., 150 East Fifteenth Street, New York, for a one-story equipment storage and distributing building, 65 x 213 ft., at 617-31 East Fourteenth Street, to cost about \$200,000. Thomas E. Murray, Inc., 55 Duane Street, is architect and engineer.

The Benedict Metal Works, Inc., 1654 Webster Avenue, New York, manufacturer of drawn metal specialties, is said to have preliminary plans for a three-story addition, estimated to cost \$45,000.

The Goodyear Tire & Rubber Co., 123 West Sixty-fourth Street, New York, with main plant at Akron, Ohio, has awarded a general contract to the Barney-Ahlers Construction Corporation, 110 West Fortieth Street, for a six-story factory branch and distributing plant, 100 x 166 ft., at Fifty-eighth Street and Eleventh Avenue.

The Inspiration Consolidated Copper Co., 25 Broadway, New York, is disposing of a note issue of \$6,000,000, the majority of the proceeds to be used for construction work at its properties at Globe, Ariz., including a crushing plant, leaching mill, and electrolytic refining plant. The company is affiliated with the Anaconda Copper Mining Co., 25 Broadway.

Oscar Goldschlag, 1428 Broadway, New York, architect, has plans under way for a two-story automobile service,

repair and garage building, 136 x 165 ft., at Albany, N. Y., to cost about \$150,000, with equipment.

The Bullo Cycle Scooter, Inc., 7 Ninety-second Avenue, Woodhaven, L. I., manufacturer of children's vehicles and parts, has acquired the factory at 102d Street and Ninety-second Avenue for a local plant.

The Board of Education, Oyster Bay, N. Y., is considering the installation of manual training equipment in a proposed two-story school estimated to cost \$600,000, for which plans are being drawn by Tooker & Marsh, 101 Park Avenue, New York, architects.

The Robert Gair Co., 50 Washington Street, Brooklyn, manufacturer of corrugated paper boxes and containers, has awarded a general contract to the Turner Construction Co., 244 Madison Avenue, New York, for its proposed two-story and basement plant, 160 x 350 ft., at Piermont, N. Y., to cost \$275,000 with equipment. William Higginson 15 Park Row, New York, is architect and engineer.

The Mack International Motor Truck Corporation, 25 Broadway, New York, has filed plans for a proposed one-story factory branch and service and repair building at White Plains, N. Y., to cost \$175,000 with equipment. Plans are under way for a new assembly plant and factory branch at Minneapolis, Minn., to cost close to \$400,000. It is expected to begin work in the spring. Local headquarters are at 2231 University Avenue, with Thomas F. Egan, manager.

The G. Danzls Co., Inc., 47 Ann Street, New York, manufacturer of tools, is said to be planning to purchase a shaper and other equipment.

The Troy Community Garage, Troy, N. Y., organized by F. M. Baucus of the Troy Automobile Club, and other officials of that organization, has tentative plans for a four-story garage with capacity for 400 cars, including machine shop and service department, estimated to cost \$350,000 with equipment. It is expected to begin work early in the summer.

The J. S. & L. Carlson Co., 89 Walnut Street, Montclair, N. J., builder and contractor, will erect a one-story machine shop at its plant.

The Wright Aeronautical Corporation, Paterson, N. J., manufacturer of airplanes, aircraft engines, etc., is having plans drawn for a one-story works at Hasbrouck Heights, N. J., to cost \$50,000 with equipment.

Fire, March 2, destroyed a portion of the plant of the Standard Underground Cable Co., Perth Amboy, N. J., with loss reported at close to \$200,000 with equipment. Plans for rebuilding are under advisement. Headquarters are at Seventeenth Street and Penn Avenue, Pittsburgh.

The Crane Market

THE volume of new inquiry for overhead cranes is small but sellers of locomotive cranes report an increasing number of inquiries, principally from contractors. The Foundation Co., 120 Liberty Street, New York, recently closed on several crawl tread locomotive cranes for a Florida project with a builder in the West. The Phoenix Utility Co., 71 Broadway, New York, has issued an inquiry for a 7½-ton hand power crane for use at Sanford, Fla.

In addition to the cranes purchased this week by the Carnegie Steel Co., Pittsburgh, for the Homestead works, there are several more pending. The Jones & Laughlin Steel Corporation is inquiring for two 20-ton, 100-ft. span cranes for its South Side works. Award of the cranes for the Weirton Steel Co. sheet mill extension is delayed during revision of plans. The Columbia Steel Co., Butler, Pa., is expected to inquire for cranes soon.

Among recent purchases are:

General Electric Co., Schenectady, N. Y., a 15-ton, 49-ft. 6-in. span, 4-motor overhead crane for Pittsfield, Mass., from an unnamed builder.

De Sante Freres, Louisville, Quebec, a 20-ton used Brownhoist locomotive crane from Philip T. King, New York.

Curley Brothers, Inc., Curleyville, N. Y., a 15-ton used Brownhoist locomotive crane from Philip T. King, New York.

Foscale Iron Works Co., Cattenberg, N. J., a 3-ton electric hoist from Alfred Box & Co.

Alfred Philippini, structural steel fabricator, West New

York, N. J., a 5-ton, 46-ft. span, 1-motor overhead crane from Alfred Box & Co.

Department of Public Utilities, Cleveland, a 10-ton, 52 ft. span electric traveling crane from the Cleveland Crane & Engineering Co.

Weirton Steel Co., Weirton, W. Va., a 175-ton ladle crane from the Morgan Engineering Co. and a 5-ton, double rope grab bucket trolley from the Shaw Electric Crane Co.

Tennessee Coal, Iron & Railroad Co., Fairfield, Ala., a 200-ton ladle crane from the Morgan Engineering Co. and a 12-ton open-hearth charging machine from the Alliance Machine Co.

Carnegie Steel Co., Pittsburgh, for the Homestead works, two 200-ton stripper cranes, one 25-ton and one 15-ton mill type cranes from the Alliance Machine Co. and one 20-ton, 106 ft. span, slab charging crane from the Morgan Engineering Co.

Standard Steel Car Co., Hammond, Ind., 2 portable couch hoists from the Whiting Corporation.

Sanitary District, Chicago, one 35-ton, 70-ft. span, 3-motor and one 15-ton, 1-motor electric cranes from the Whiting Corporation.

Local Construction Co., Ltd., Montreal, a 15-ton used Austin gasoline operated crane from A. R. Gelinas, Montreal.

International Coal Co., Ltd., Montreal, a used McMyler crawl-tread locomotive crane, from A. R. Gelinas, Montreal.

Texas Utility Co., Lubbock, Tex., two 10-ton, 50 ft. span, hand power cranes from H. D. Conkey & Co.

The New Jersey Chain Corporation, Newark, N. J., recently formed to manufacture jewelry chains and other plated novelties, has leased a portion of the building at 17-25 Nevada Street, and will install equipment for a new plant. W. Lichtenfels is one of the heads of the company.

The N. B. Conover Lumber Co., 207 Market Street, Newark, is said to have negotiations under way for lease of property at the Kenna Terminal, Port Newark, for a large storage and distributing plant, with conveying, loading and other handling equipment.

The Middlesex County Vocational School Board, New Brunswick, N. J., is completing plans for a proposed vocational school on New Brunswick Avenue, Perth Amboy, N. J., to cost \$270,000. Five shops will be installed, with equipment and facilities to accommodate 250 students. Bids will be asked soon. Greisen & Tuzik, Perth Amboy, are architects.

Kelly & Co., Inc., 91 New Jersey Railroad Avenue, Newark, manufacturer of paper mill equipment and supplies, has awarded a general contract to Levine Brothers, 519 South Fourteenth Street, for a new two-story plant, 160 x 162 ft., at 780 Frelinghuysen Avenue, to cost approximately \$50,000. Fred L. Pierson, 160 Bloomfield Avenue, Bloomfield, N. J., is architect.

The Central Horn & Toy Works, Inc., 37½ Broome Street, New York, has been incorporated to manufacture metal horns, children's pails and shovels, and various other metal novelties. Harry G. Kaplan is secretary.

The Chrome Alloy Tube Corporation, Newark, has been incorporated to manufacture chrome alloy tubes in cooperation with the Newark Tube Co., 560 Ferry Street. The Chrome Alloy Tube Corporation will specialize in tubing from ascotloy, duraloy, enduro, delhi and similar metals and will also engage in special work involving the use of these metals. E. W. Bachman is president.

Philadelphia

PHILADELPHIA, March 8.

THE Pure Oil Co., Lafayette Building, Philadelphia, with headquarters at Columbus, Ohio, has acquired property on Thirty-first Street, near Grays Ferry Avenue, for \$51,000 and is said to be contemplating the construction of a new storage and distributing plant to cost in excess of \$75,000 with equipment.

A power plant, to cost about \$25,000 with equipment, will be built at the mill of the La France Textile Co., Orthodox and Large Streets, Philadelphia.

I. W. Levin, 1011 Chestnut Street, Philadelphia, architect, has plans for a new automobile service, repair and garage building at Baltimore Avenue and Forty-seventh Street, to cost close to \$500,000 with equipment.

The Ford Motor Co., Detroit, will dispose of its plant at Philadelphia at an early public sale. The equipment will be removed to the new assembly works at Chester, Pa. The

company will also sell other obsolete plants at Cambridge, Mass., Louisville, Memphis, Dallas and Minneapolis.

Bids have been asked by the Ajax Electrothermic Corporation, 636 East State Street, Trenton, N. J., manufacturer of electrical apparatus, induction furnaces, etc., for its proposed one and two-story plant, 62 x 200 ft., at Fernwood, N. J., to cost \$50,000. A two-story office is also planned. M. Ward Easby, Schaff Building, Philadelphia, is architect. The company is a subsidiary of the Ajax Metal Co., Philadelphia.

The Abington Township School Board, Abington, Pa., has plans for a power house for service at the local schools. Haeckel & Hokanson, 1211 Chestnut Street, Philadelphia, are architects. J. Oliver Potts, Glenside, Pa., is president of the board.

The South Penn Collieries Co., Pottsville, Pa., has preliminary plans for a new coal breaker in the vicinity of Shepton, Pa., to cost about \$85,000 with equipment. It has recently completed a similar plant near Pottsville, replacing a structure destroyed by fire.

Smith-Whitaker, Inc., Easton, Pa., has been incorporated with a capital of \$25,000 to operate a plant for the manufacture of card clothing and other textile mill equipment. The new organization will take over an existing plant in the factory at Spring Garden and Elder Streets and plans expansion. It is headed by Frank F. and Stanley E. Smith, and Samuel Whitaker.

The Bates Valve Bag Co., Nazareth, Pa., manufacturer of bag machinery, parts, etc., has preliminary plans for a one-story addition, 90 x 100 ft., adjoining a works recently completed. It also proposes to construct a one-story warehouse and distributing building, 70 x 145 ft. J. L. McConnell, 111 West Jackson Boulevard, Chicago, is architect and engineer. Headquarters are at 8200 South Chicago Avenue, Chicago.

The Carlisle Gas & Water Co., Carlisle, Pa., has been acquired by N. M. Seabreeze & Co., Packard Building, Philadelphia, for \$1,000,000, who will operate in the future. Plans are under way for extensions and improvements, including the installation of additional equipment, estimated to cost \$100,000.

The Upper Moreland Township School Board, Willow Grove, Pa., contemplates the installation of manual training equipment in its proposed two-story high school, to cost \$130,000. T. Frank Miller, 1012 Walnut Street, Philadelphia, is architect.

The Superintendent of Streets and Public Improvements, room 408, Dauphin Building, Harrisburg, Pa., is asking bids until March 24 for castings for the Bureau of Highways as required during the year ending Dec. 31, 1926.

Stanley W. Thatcher, Bangor, Pa., has organized the Thatcher Co. to operate a plant for the manufacture of iron, steel, brass and other metal products.

The Lehigh Portland Cement Co., Allentown, Pa., has begun the erection of an addition to its mill B, at West

Coplay, Pa., to be equipped as a packing plant. The equipment will be electrically operated.

Louis Reisman, Miller Building, Spruce Street, Scranton, Pa., architect, is asking bids on a general contract for a three-story automobile service, repair and garage building, 50 x 150 ft., to cost \$80,000 with equipment.

The Kline Auto Body Corporation, 328-32 South Seventeenth Street, Allentown, Pa., has taken over an adjoining building for extensions, providing a total floor area of 16,000 sq. ft. Possession will be taken April 1. H. A. Kline is head. Lewis M. Schaeffer is shop superintendent.

William R. Heffner, Pottstown, Pa., will replace the damage at his welding works caused by fire March 3. An official estimate of loss has not been announced.

The Sheldon Axle & Spring Co., Wilkes-Barre, Pa., is advancing production at its plant and will develop maximum output in the near future. It is expected to add about 1000 men to the present working force during the next 30 to 60 days.

The C. H. A. Dissinger & Brothers Co., Wrightsville, Pa., is planning to build additions, 60 x 100 ft., for the manufacture of automobile pistons and rings.

South Atlantic States

BALTIMORE, March 8.

PROPERTY on South Ridgely Street, Baltimore, totaling 50 x 150 ft., has been acquired by the William Hutcheson Sons' Co., 212 North Holliday Street, machinist, and will be used for a proposed one-story machine shop. Equipment will be installed for die production, machine screw work, etc.

The Ramp Building Corporation, 21 East Fortieth Street, New York, F. W. Moe, chief engineer, has plans for a five-story automobile service, repair and garage building, 100 x 105 ft., with two-story extension, 25 x 100 ft., on Water Street, Baltimore, to cost \$400,000. It will have a capacity of 500 cars.

The American Standard Clay Co., Inc., Sandersville, Ga., recently formed with a capital of \$80,000, will establish a local clay-mining plant on about 500 acres. A clay-washing and refining mill will be erected, with power house and other buildings. Mining equipment will be installed. Work has begun. I. M. Maulden, 1816 Senate Street, Columbia, S. C., is treasurer.

The Cooke-Lewis Foundry Co., 422 Fields Avenue, Greensboro, N. C., has concluded negotiations for the purchase of the local plant and business of the Westbrook Elevator Co. for expansion.

The Water Department, Baltimore, has secured a fund of \$1,615,000 for extensions and betterments in water plants and system. About \$350,000 will be used for additions and improvements at the Montebello waterworks, including new equipment; and \$250,000 for similar work at the Mount Royal pumping station. Bernard V. Siems is water engineer.

The Concrete Products Co., Columbus, Ga., manufacturer of large size concrete pipe, will expand operations with the manufacture of interlocking concrete tile and kindred specialties. Wilson M. Camp is president.

Walter Sibert, 148 Granby Street, Norfolk, Va., contemplates the installation of a local brick-manufacturing plant and is in the market for brick molding and other machinery.

The Southern Power Co., Charlotte, N. C., is said to have plans under consideration for a new steam-operated electric power house on the Ararat River, near Siloam, N. C., where site was recently acquired.

The Republic Boiler & Radiator Co., Union Avenue, Woodberry, Baltimore, is considering preliminary plans for expansion, to include the installation of additional equipment to advance the present output from 40 to 50 per cent. M. H. Landis is president.

The Piedmont Building Supply Co., Highland Street, Hickory, N. C., has awarded contract to the Poe-Triplett Construction Co., Lenoir, N. C., for the construction of a new branch factory at Lenoir. A complete woodworking plant will be installed in a one-story mill, 60 x 110 ft.

The Ware County Light & Power Co., Waycross, Ga., is considering the construction of electric light and power plants at Patterson and Offerman, Ga. Extensions will also be made in transmission systems. H. A. Nell is general manager.

The Hackley-Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for a lathe, quick change gear type, about 26-in. swing and 10-ft. bed; one 150-hp. and one 75-hp. Corliss engine, with accessories; one belt-driven air compressor, about 10 x 10 in.; one crawler-type shovel, about 1-yd. capacity; one mechanical pressure blower, belt driven, 6 to 8-in. discharge, and two gyratory crushers, Nos. 4 and 9, McCulley type preferred.

The Island Export Co., Keyser Building, Baltimore, has

begun work on a new lubricating oil manufacturing plant at the foot of Third Street, Canton district, to include blending, storage and distributing departments. The initial works will be equipped for a capacity of 1000 bbl. per day. The tankage department will have facilities for handling 50,000 bbl. at one time.

The Common Council, Martinsville, Va., plans the installation of pumping equipment in connection with proposed extensions and improvements in the municipal waterworks, estimated to cost \$60,000. A bond issue is being arranged.

The Butcher Adjustable Window Corporation, 251 Tazewell Street, Norfolk, Va., recently organized, will operate a local plant for the manufacture of special windows and operating mechanisms. C. E. Herbert is president.

The Petersburg Luggage Co., Inc., Petersburg, Va., has been making inquiries for a large power knife for cutting strawboard and kindred products used in suitcase and other luggage manufacture.

The Chester Auto & Wagon Works, Chester, S. C., is said to be arranging for the removal of its plant to Columbia, S. C., where additional equipment will be provided for increased automobile body manufacture. It is likely that the company name will be changed to the Columbia Auto & Wagon Works, effective with the establishment of the new plant. F. E. Benoit is head.

The Seeger Refrigerator Co., St. Paul, Minn., has awarded a general contract to the King-Bailey Co., Healey Building, Atlanta, Ga., for a new branch plant at Spring and Mills Streets, Atlanta, totaling about 8500 sq. ft. of floor space, estimated to cost \$85,000 with equipment. S. G. Gray is local manager.

The Wilson-Hock Co., City Point, Va., machinery dealer, has inquiries out for an engine-generator set, 200 to 300-kw. capacity.

Chicago

CHICAGO, March 8.

THE week has been quiet except in small machine tools, for which both inquiry and purchases have been in good volume. The Nash Motors Co., at both its Kenosha and Milwaukee plants, has been a heavy buyer of production and standard tools for its motor departments. The list closed included drill presses, automatic grinders, special milling machines and crank shaft equipment.

Pending railroad business now active includes lists from the Santa Fe, the Illinois Central and the Florida East Coast. The Northern Pacific has asked for prices on a few tools but has not issued a list. The Rock Island which is said to be preparing a sizable list, is now asking for prices on a small shaper for its Forty-seventh Street shop laboratory, Chicago. The Santa Fe has added the following to its list: A Sundstrand or equivalent, motor-driven radius link grinder with a maximum radius of 100 in., and a Davis Boring Tool Co., or equivalent, motor-driven cutter grinder, having a surface speed of 5500 to 6000 ft. per min.

The Crane Co., Chicago, bought a spline milling machine and two hand milling machines and the Independent Pneumatic Tool Co., Chicago, bought a vertical profiling machine and a spline milling machine. The Motor Valve Mfg. Co., Chicago, bought three spline milling machines. The Ramapo-Ajax Corporation, Chicago, has bought a frog and switch planer for its St. Louis shop. Makers of frogs and switches are concerned because some of the railroads are buying equipment for the production of special track equipment.

Used machinery is in good demand, but dealers find that it is hard to get at prices which make rehandling profitable. James B. Clow & Sons, Chicago, have bought a used 96-in. x 30 ft. Niles heavy-duty lathe, and the Guyton & Cumfer Mfg. Co., Chicago, has purchased a rebuilt 48-in. x 48-in. x 14-ft. four-head planer and a used No. 2½ heavy duty Rockford universal milling machine.

S. Scott Joy, 2001 West Pershing Road, Chicago, is preparing plans for a six-story and basement addition to a furniture factory, 50 x 180 ft., to cost \$200,000.

The Elkay Mfg. Co., 606 North Sangamon Street, Chicago, manufacturer of plumbing supplies, will build a one-story brick factory, 75 x 125 ft., to cost \$25,000. J. A. Lindstrand, 1612 Milwaukee Avenue, is the architect.

The Joffe Mfg. & Supply Co., 3700 South Morgan Street, Chicago, electrical equipment manufacturer, will build a two-story shop, 90 x 90 ft., to cost \$7,000. R. H. Maderty, 14 West Washington Street, is architect.

The Strombeck-Becker Co., Fifty-first Street and Fourth Avenue, Moline, Ill., manufacturer of wooden toys and wooden handles, has placed contract with the Axel Carlson

Construction Co., Moline, for the erection of a four-story factory addition to cost \$30,000.

The Arcade Mfg. Co., Freeport, Ill., manufacturer of molding machines, will build a new foundry, 200 x 200 ft., and cupola house, 40 x 40 ft. Plans now call for a No. 8 cupola, with melt of 12 to 14 tons per hr. A 5000-lb. elevator will be installed in the cupola house.

The Dooley & Braden Mfg. Co., Davenport, Iowa, maker of oil heaters, will move its plant at an early date to 2416 Ford Avenue, Rock Island, Ill. It is reported that \$10,000 will be expended for new machinery.

The Morton Mfg. Co., 5105-5143 West Lake Street, Chicago, manufacturer of railroad appliances, welded tubing and Acme bathroom cabinets, has awarded a general contract to E. L. Ward, 4733 Congress Street, for a one-story buildings, each two stories, 75 x 225 ft. and 50 x 105 ft. respectively, the latter to house the general offices. Ground has already been broken for these additions which will cost over \$100,000 without equipment.

Contract has been let by the Hendrickson Motor Truck Co., 3538 South Wabash Avenue, Chicago, to Erickson-Christianson, Inc., 6437 South Park Street, for a one-story addition to its machine shop, 50 x 170 ft., to cost about \$25,000.

The Dewey Portland Cement Co., Mutual Building, Kansas City, Mo., has acquired property near Davenport, Iowa, as a site for a new mill estimated to cost \$1,750,000. The works will include a power house and machine shop. The J. C. Buckbee Co., 38 South Dearborn Street, Chicago, is architect and engineer. F. E. Tyler is president.

The Cedar Rapids & Marion City Railway Co., Cedar Rapids, Iowa, is preparing plans for new car barns and shops, with repair and reconditioning facilities, 140 x 300 ft., to cost \$225,000 with equipment. It is purposed to begin work in the spring.

The Trinidad Electric Transmission, Railway & Gas Co., Trinidad, Colo., is having plans drawn for a new steam-operated electric power plant at Walsenburg, Colo., to cost about \$200,000 with equipment.

The Board of Directors, School District No. 20, Pueblo, Colo., plans the installation of manual training equipment in its proposed two-story and basement junior high school at Pueblo, estimated to cost \$250,000. William W. Stickney, First National Bank Building, is architect.

The Chamberlain Metal Weatherstrip Co., 1644 Lafayette Street, Detroit, has awarded a general contract to the Peru Construction Co., Peru, Ill., for a two-story and basement addition to its plant at Peru to cost \$45,000. Lockwood, Greene & Co., Buhl Building, Detroit, are architects and engineers.

The Jewell Electrical Instrument Co., 1640 Walnut Street, Chicago, has awarded a general contract to B. J. Regnell, 19 South La Salle Street, for its proposed two-story and basement addition, 75 x 100 ft., to cost \$45,000 with equipment. F. L. Randall, 160 North La Salle Street, is architect and engineer.

The Lefebvre Ledger Co., Cedar Rapids, Iowa, contemplates the installation of a nickel-plating plant in a proposed one-story addition, 200 x 250 ft., for which bids will be asked soon on a general contract.

Bids will be asked in the spring by the Blackhawk Foundry & Machine Co., 323 Clark Street, Davenport, Iowa, for its proposed two-story addition, 100 x 110 ft.

The Eastern Minnesota Power Co., Pine City, Minn., is said to be considering the construction of a hydroelectric power plant on the Snake River, near Pine City, reported to cost about \$200,000.

The Donahue Steel Products Co., 204 North Jefferson Street, Chicago, is inquiring for a 1½-in. Acme upsetter, also larger sizes; 2500-lb. board drop hammer, trimming presses, bulldozers, single and double end punch presses, threading machines, thread rollers, tappers and cold headers.

The R. B. Hayward Co., 1700 Sheffield Avenue, Chicago, is inquiring for one 10-ft. used power groover, either Niagara or Stoll.

Buffalo

BUFFALO, March 8.

THE Saskatchewan Co-Operative Elevator Co., Buffalo, will soon begin an addition to its local grain elevator to cost \$600,000 with machinery. Plans are also under consideration for further additions.

The Board of Education, Depew, N. Y., is considering the installation of manual training equipment in the proposed three-story addition to the high school estimated to cost \$160,000. F. A. Spangenburg, 250 Delaware Avenue, Buffalo, is architect.

The National Carbon Co., 30 East Forty-second Street, New York, manufacturer of electric storage batteries, etc.,

has awarded a contract to the Bollinger-Andrews Construction Co., Verona, Pa., for a new plant at Niagara Falls, N. Y., to cost about \$85,000.

The Algonquin Paper Co., Ogdensburg, N. Y., has awarded a general contract to Burns Brothers & Haley, Watertown, N. Y., for four one-story additions, estimated to cost \$200,000 with machinery. The Stebbins Engineering Co., Watertown, is engineer.

Following the recent purchase of the Genesee Valley Power Co., Canadea, N. Y., by the Canadea Power Corporation, lately organized by Robert M. Searle, Rochester, N. Y., and associates, the last noted company has plans under consideration for the construction of a hydroelectric power plant in the Canadea Gorge, with initial capacity of about 2000 kw.

The Board of Education, Syracuse, N. Y., is considering the installation of manual training equipment in the proposed boys' continuation school to be constructed at 400 West Genesee Street, estimated to cost \$190,000, for which it is expected to ask bids on general contract early in April. Melvin S. King, Dennison Building, is architect.

The Buffalo Tool & Supply Co., Buffalo, is having plans prepared for the construction of a warehouse and office building, 53 x 140 ft., steel and brick, to be equipped with a 10-ton, 48-ft. span crane. The office portion will be two stories.

The Tonawanda Electric Steel Casting Corporation, Ironquills Building, Buffalo, has been incorporated with a capital of 250 shares of stock, no par value, to manufacture steel castings. It contemplates leasing a plant.

Cincinnati

CINCINNATI, March 8.

AFTER a short period of unusually good business, sales fell off considerably the past week and buying has been limited almost entirely to single machines. Local builders have a large volume of outstanding quotations, but are experiencing difficulty in converting inquiries into orders. The automotive field is showing signs of increasing interest. The Buick Motor Co., Flint, Mich., is reported to be contemplating the purchase of 25 special lathes and other companies in the Detroit territory are expected to buy a moderate amount of equipment in the next month.

Railroads are still an important factor in the market. The Pennsylvania and the Big Four have closed for a small number of tools, while placing of the Florida East Coast list is anticipated at any moment. The Boye & Emmes Machine Tool Co., Cincinnati, continues to purchase tools for its new plant. A Beaumont, Tex., buyer is said to have expended approximately \$40,000 locally in the past ten days, contracting for turret lathes, oil field lathes and shapers.

The Canadian National Railways are inquiring for two extension bed gap lathes. The New York Central took a 32-in. Aurora motor-driven drill for installation at West Albany, N. Y., while the Central of Georgia bought a 2-in. Acme triple bolt cutter. The McClintic-Marshall Co., Chicago, purchased four Long & Allstatter punching machines. The Great India Peninsular Railway bought a No. 3 axle lathe from the Niles-Bement-Pond Co. The latter also sold a 42-in. boring mill to the United Fruit Co. A local builder booked a small gap lathe in Cincinnati and an engine lathe in Buffalo. A Cleveland and a Chicago company each bought a planer. The John Steptoe Co. sold a 20-in. shaper in Wisconsin and a 14-in. machine in St. Louis.

Sales of used machinery continue at a moderate rate. The Burden Iron Works, Troy, N. Y., bought a 36-in. Pond planer and the Marquette Tool & Mfg. Co., Chicago, purchased a 30-in. Pond planer. The Christiana Machine Co., Christiana, Pa., took a 24-in. Gleason planer. The Norton-Broadway Machinery Co., Cincinnati, bought 20 tools, consisting of planers, lathes, drills and shapers, from the Mueller Machine Tool Co., Cincinnati, which is going out of business. The Willard Machine Tool Co., Covington, Ky., which is dismantling its plant, is offering eight Willard lathes and a number of other machines, including grinders, planers, gear cutters and presses.

The Mueller Machine Tool Co., 2427 Colerain Avenue, Cincinnati, manufacturer of radial drills and lathes, has sold its plant and equipment to the Shepard Elevator Co., Canal and Jackson Streets, Cincinnati, which will use it for the manufacture of freight and passenger elevators.

The Willard Machine Tool Co., Third and Madison Streets, Covington, Ky., manufacturer of lathes, is liquidating its

stock preparatory to discontinuing business. It has placed on the market a number of machine tools, motors and other equipment.

The Dayton Portland Cement Co., Dayton, Ohio, care of James F. Gibbons, manager, Gibbons Hotel, Dayton, recently organized, has secured about 190 acres at Germantown, near Dayton, and will have plans drawn at once for works to cost approximately \$500,000 with machinery. A power house will be constructed. The new company is capitalized at \$1,000,000. Mr. Gibbons is president, and Adam Gilbert, president of the Farmers & Citizens Bank, Germantown, vice-president.

The Ideal Equipment Co., 369 Dublin Avenue, Columbus, Ohio, has been inquiring for a 400-hp. heavy-duty Corliss engine, with 34-in. face pulley for belt drive.

Hart, Nevins, Freeland & Roberts, Independent Building, Nashville, Tenn., architects, are completing plans for a five-story automobile service, repair and garage building, with capacity of 550 cars, reported to cost \$350,000 with equipment.

The Stimpson Computing Scale Co., Louisville, has acquired property at Breckinridge and Logan Streets, 120 x 365 ft., as a site for a proposed multi-story plant, estimated to cost \$200,000 with machinery. Plans will soon be drawn.

The Kentucky Utilities Co., Lexington, Ky., operating the Kentucky Hydro-Electric Co., is disposing of a bond issue of \$4,000,000, a portion of the proceeds to be used for extensions and improvements in plants and system. Harry Reid is president.

The Southern Gas & Power Corporation, Philadelphia, has acquired the plant and properties of the Lexington Water Co., Lexington, Ky. Plans are under advisement for extensions and the installation of power equipment, pumping machinery, etc., reported to cost \$200,000. Walter Whetstone is president of the purchasing company.

A 91-B Toledo straight side punch press, or equivalent, with 4-in. stroke and 10-in. shut height die space, is wanted by the Ohio Stamping Co., 1114 Bolander Avenue, Dayton, Ohio.

Cleveland

CLEVELAND, March 8.

MACHINE tool business the past week was rather quiet, with orders for the most part limited to single machines. No action has been taken on several lists which recently came out. The decision of the Interstate Commerce Commission against the Nickel Plate railroad merger has been a disappointment to the machinery trade. Some preliminary work had been done toward re-vamping various shops of the railroads which were to have been taken over under the merger plans and if the consolidation had gone through considerable buying was expected for the various units of the Nickel Plate system. The Chrysler Motor Corporation, Detroit, bought two 1-in. x 18-in. automatic lathes. The F. Joseph Lamb Co., Detroit, bought a vertical surface grinder.

H. J. Eberman, 1103 Eighteenth Street, N. W., Canton, Ohio, is at the head of a project to construct a steel fabricating works. A site has been selected near Allen Avenue and the line of the Baltimore & Ohio Railroad. The plant will be one story and is estimated to cost \$90,000 with equipment.

The Sanderson Cyclone Drill Co., Orrville, Ohio, has had plans prepared for a one-story building, 70 x 200 ft., for the manufacture of gasoline engines, at an estimated cost of \$100,000.

The Cleveland Automobile Co., Cleveland, has awarded contract to the William Dunbar Co., 8201 Cedar Avenue, for a four-story addition, 83 x 100 ft.

The Owen Bucket Co., Rockefeller Building, Cleveland, has placed contract with the Uhl-Jaster Co., 1900 Euclid Building, for a one and two-story plant, 110 x 190 ft., for the manufacture of clam shell grab buckets.

The U. S. Air Compressor Co., 5300 Harvard Avenue, has placed contract with the Sam W. Emerson Co., 508 Union Building, for a one-story plant, 80 x 90 ft.

The Cox Products Corporation, 5606 Luther Avenue, Cleveland, has awarded contract to the William Dunbar Co. for a plant to manufacture shock absorbers and other automobile accessories.

The Transue & Williams Steel Forging Corporation, Alliance, Ohio, will shortly begin the erection of a forging shop, 80 x 240 ft. The contract for the steel has been placed with the Alliance Structural Co. F. E. Dussel is general manager.

The Electric Auto Lite Co., Toledo, Ohio, will build a four-story addition, 100 x 300 ft.

The A. G. Sharp Lumber Co., Youngstown, Ohio, will build a four-story mill, 85 x 190 ft. A. G. Sharp is manager.

Manual training equipment will be required for a school in Canal Fulton, Ohio; George A. Hoover, president of the Board of Education. Equipment will also be required for a centralized grade and high school near Greenville; Charles Bussard, Arcanum, Ohio, president of the Board of Education.

The Graphite-Bronze Co., Cleveland, has leased 40,000 sq. ft. in a factory building at 880 East Seventy-second Street which will double its capacity for the production of automobile parts.

New England

BOSTON, March 8.

MORE business was transacted in the local machine tool market the past week than in any similar period in years. The leading houses are back on a normal basis with bookings involving a large total. Reports from other New England centers are equally encouraging. Machine tool builders, in a majority of cases, are operating at capacity with deliveries becoming more extended, especially on certain types of grinding machines which are advanced to four months or more. Current buying is for new as well as used equipment and includes all classes of machinery. One textile mill, within a week, bought \$17,000 worth of machine tools for a Southern mill. One of the largest individual purchases the past week included approximately \$35,000 worth of used and new equipment for New England delivery. A transportation company is about to close on two large tools costing around \$17,000, and a Rhode Island plant on eight new milling machines. A Providence silverware manufacturer within the last few days bought a 500-lb. hammer. New York used machinery dealers are combing this market for all kinds of machines, thereby adding to the activity. A large percentage of inquiries four, five and six months old are covered and the trade is working on those sent out more recently. New business continues to develop, but prospects are not as numerous as heretofore.

The market for small tools is also active. Prospective buyers of certain types, unable to secure deliveries within five or six weeks, have canceled orders. One New England maker of small tools has withdrawn quotations which is taken as an indication of higher prices in the near future.

The Maine Central Railroad will shortly rebuild its Bangor roundhouse, recently destroyed by fire.

The L. A. Carpenter Pressed Metal Co., 336 Main Street, Cambridge, Mass., contemplates extensive remodeling of its plant.

The General Electric Co., River Works, Lynn, Mass., about April will start the erection of a one-story 40 x 70 ft. galvanizing plant.

Plans will be ready about April 1 for a large pumping station for the city of Lynn, Mass. Morris Knowles, 507 Westinghouse Building, Pittsburgh, is the engineer.

French & Hubbard, 210 South Street, Boston, engineers have plans for a power house addition, to cost \$1,000,000 with equipment, for the Cambridge Electric Light Co., Cambridge, Mass. J. Henry Russell is president of the company.

The Whitlock Coil Pipe Co., Hartford, Conn., is completing its \$60,000 Elmwood district plant to be used for the production of a new type all steel cabin motor yacht. George T. Jacobs is president.

Bids have closed on a three-story and basement, 125 x 200 ft., warehouse on Babcock and Ashford Streets, Allston, Boston, for the Pittsburgh Plate Glass Co., for which miscellaneous equipment is required. Denamore, Le Clear & Robbins, Boston, are the architects.

In connection with a rearrangement of their plant for more efficient manufacturing operations, the Taft-Pelree Mfg. Co., Woonsocket, R. I., has concluded negotiations for the purchase of the following new equipment: One Campbell nibbling machine, one 16-in. Cincinnati shaper, one 24-in. Cincinnati shaper, one Hardinge 9-in. cataract precision lathe, one Pratt & Whitney 15-in. geared head precision lathe,

one Napier band saw and one Pratt & Whitney jig boring machine.

The Murray Automatic Boiler Feeder Co., 945 Main Street, Bridgeport, Conn., has been incorporated and will let contracts for the manufacture of its product. Later the company intends leasing or building a factory in Bridgeport. M. Sholman is president and treasurer.

The Wakefield Mfg. Co., Wakefield, Mass., has been organized to take over and expand the local plant and business of the George E. Belcher Machine Co., North Avenue, near West Water Street.

The Davis-Jones Insulated Wire Co., Phillipsdale, R. I., has asked bids on a general contract for a two-story plant, 30 x 40 ft.

The Boston Elevated Railway Co., Park Square Building, Boston, is said to have preliminary plans for new car barns and shops for repair and conditioning in Fresh Pond district, Cambridge, Mass., to cost about \$175,000.

The North & Judd Mfg. Co., East Main Street, New Britain, Conn., manufacturer of automobile hardware and kindred metal goods, has awarded a contract to the William H. Allen Co., New Britain, for rebuilding the portion of its foundry recently destroyed through collapsing of the roof.

The Elliott Addressing Machine Co., Cambridge, Mass., has awarded a general contract to Somers & Drisko, Park Square Building, Boston, for extensions in its plant.

The Root Co., Chidsey Avenue, Bristol, Conn., manufacturer of metal stampings, brass goods, etc., is completing an addition to its plant.

John G. Kerry president Canadian Paperboard Co., Montreal, recent purchaser of the mill of the Uncas Paper Co., Thamesville, Conn., is arranging for the organization of a new company under Connecticut laws to take over and operate the plant. It is expected to resume operations soon. The mill will be given over to paperboard production and will develop an output of about 100 tons per day.

The Middle West Utilities Co., 72 West Adams Street, Chicago, has acquired the plants and property of the Vermont Hydro-Electric Co., Claremont, N. H., and vicinity, which will be operated in conjunction with other properties recently acquired in this section. Extensions and improvements are planned, including transmission line construction.

Detroit

DETROIT, March 8.

ABOUT 7 acres at River Rouge, Mich., has been acquired by the Consolidated Paper Co., Monroe, Mich., as a site for a new plant. An existing building will be remodeled for the manufacture of waterproof panel board products for automobiles. The initial plant is reported to cost about \$85,000.

The Detroit Steel & Conveyor Co., 8602 Mount Elliott Avenue, Detroit, has awarded a general contract without competition to Albert A. Albrecht, Penobscot Building, for a two-story addition, 128 x 140 ft., to cost \$95,000 with equipment. Smith, Hinchman & Grylls, Marquette Building, are architects.

The Detroit Edison Co., Detroit, is arranging a construction and improvement program during 1926 to cost \$28,000,000, including new power plants, additions to present generating stations and transmission line extensions.

The Oakland Motor Car Co., Oakland Avenue, Pontiac, Mich., has plans for a one and two-story addition, 180 x 320 ft., to cost approximately \$150,000. The Austin Co. is the engineer and will receive the erection award. A. R. Chaney is vice-president and general manager.

The Diamond Crystal Salt Co., St. Clair, Mich., is said to be planning the installation of pulverized coal and water-softening equipment at its power house.

Andrew Clubb, 1312 Penobscot Building, Detroit, architect, has preliminary plans for a two-story automobile service, repair and garage building, 140 x 150 ft., to cost \$115,000 with equipment.

The Jaxson Steel Products Division of the General Motors Corporation, Horton and Chapin Streets, Jackson, Mich., has plans for an addition to its power plant, 25 x 42 ft., to cost \$50,000.

Achilles Despres, Grand Rapids, Mich., furniture manufacturer, has acquired the local plant of the Powell Brass Co. Tentative plans are under advisement for extensions. It is purposed to use the factory for the manufacture of furniture hardware products.

Glen Hill has acquired the interest of his partner, Arthur Lucas, in the Rivers Tool & Machine Co., Three Rivers, Mich., and will operate the business individually in the future. Tentative plans are under consideration for expansion.

The Board of Trustees, Michigan College of Mines, Houghton, Mich., is considering the erection of a one-story machine shop at the institution, to cost \$60,000 with equipment.

The American Wood Rim Co., Onaway, Mich., will establish a new plant for the manufacture of automobile rims at Alma, Mich., replacing its plant at Onaway, recently destroyed by fire. An existing building has been secured and contract has been let to the A. Broughton Co., Alma, for a one-story addition. The entire works will cost about \$100,000 with equipment. E. J. Lobdell is president.

The Mica Spark Plug Co., 1968 Cabot Street, Detroit, has been incorporated with capital stock of \$150,000 to manufacture a spark plug which has been produced for the past three years by a partnership business to which the new corporation succeeds. The company has plans, as yet rather indefinite, for building its own factory.

Milwaukee

MILWAUKEE, March 8.

WITH inquiry increasing and coming from well distributed sources, and orders improving steadily, the activity of the machine tool industry is outstanding. The metal trades as a whole are operating at approximately 86 per cent of the 1920 peak, and this is considered virtually 100 per cent of a more or less normal figure. Skilled machinists are scarce and are wanted. A considerable number of new tools are being purchased by local shops for replacement and to effect increased capacity, although few important industrial construction projects are being undertaken as yet.

The Thomas C. Olson Co., Madison, Wis., is a new corporation with \$35,000 capital stock, organized as successor to the pioneer machine shop and foundry business of Thomas C. Olson at 609 East Washington Avenue. The ownership and management is unchanged, being vested in Thomas C. and Edward K. Olson and Joseph B. Hermens. Some additions to plant and equipment are contemplated.

The Capital City Culvert Co., Madison, Wis., manufacturing steel culverts and other galvanized sheet building materials, has increased its capital stock from \$100,000 to \$175,000 to provide for enlargement of plant and business, made necessary to a large extent by the growth of concrete highway construction. Details of the proposed improvements will be made public later.

The E. B. Tonnsen Co., 113 Harmon Street, Milwaukee, manufacturer of sheet metal building materials and supplies, is in the market for some new equipment for a \$35,000 shop addition, 86 x 100 ft., two stories, on which contracts are now being let. The architect is Richard E. Oberst, 128 Grand Avenue.

The Atlas Metal Parts Co., 997 Fifteenth Street, Milwaukee, is contemplating enlargement of its shop. The capital stock has been increased from \$10,000 to \$25,000 to accommodate the proposed expansion.

The Specialty Brass Co., Kenosha, Wis., is completing the removal of its entire operation from 900 South Howland Avenue a month earlier than planned, due to the effect of flood conditions which enforced idleness. Some time ago floor space was secured in a section of the former Winther Motor Truck Co. plant on the north side, with a view of occupancy about April 1. Five new brass furnaces and one oil furnace have been installed, and the equipment of the old plant has now been moved to the new location for immediate resumption of production. The principal line is brass fittings for dairy and creamery needs, and a new centrifugal type milk pump.

C. F. Ringer & Sons, architects, 432 Broadway, Milwaukee, are completing plans for a \$100,000 ice producer and warehousing plant for the Highland Park Ice Co., Highland Park, Ill. It will be equipped with a 75-ton artificial ice unit, and provision is made for doubling this capacity. The main building is 75 x 150 ft.

The Crown Metal Co., 255-257 Washington Street, Milwaukee, has awarded contracts for the construction of an addition, 40 x 52 ft., and is buying some miscellaneous equipment. The company specializes in plumbers' supplies and materials. George S. Meredith is president.

Brown County Motors, Inc., 610 Main Street, Green Bay, Wis., has plans by Oppenhamer & Obel, architects, Green Bay and Wausau, Wis., for a new sales and service building, 75 x 170 ft., three stories and basement, to cost about \$100,000 completely equipped. Bids will be taken after March 12 or 15. The site is at Washington and Doty Streets.

The Chicago, Milwaukee & St. Paul Railway's roundhouse and a shop building at Channing, Mich., were totally destroyed by fire March 2 with an estimated loss of \$25,000. Reconstruction is planned immediately. E. A. Laki is general agent at Milwaukee.

St. Louis

ST. LOUIS, March 8.

PROPERTY at Twenty-first and Olive Streets, St. Louis, has been acquired by the Emerson Electric Mfg. Co., 2018 Washington Street, manufacturer of electric fans, motors, etc., and will be remodeled for extensions. It is proposed to double approximately the present capacity. K. L. Parker is vice-president.

The Buckeye Cotton Oil Co., North Little Rock, Ark., is considering rebuilding the portion of its plant destroyed by fire Feb. 25, with loss reported at \$100,000.

The Southern Wheel Co., Commonwealth Building, Pittsburgh, F. C. Turner, first vice-president, will take bids at once for its proposed foundry at Goodfellow Avenue and the Terminal Railroad, St. Louis, consisting of two one-story units, 80 x 260 ft., and 60 x 226 ft., estimated to cost \$275,000 with equipment. Robert & Co., Bona Allen Building, Atlanta, Ga., are architects and engineers.

Bids are being asked by the Board of Public Service, St. Louis, until March 16, for four 650 hp. boilers, four forced-draft stokers, air preheaters, coal and ash-handling machinery, etc., for the proposed waterworks station at Howard's Bend.

The Polar Wave Ice & Fuel Co., 3638 Olive Street, St. Louis, has purchased property on Ninth Street, 120 x 300 ft., as a site for a proposed ice-manufacturing and cold storage plant, to cost \$250,000 with machinery.

The City Council, Collinsville, Ark., has tentative plans for extensions and improvements in the municipal electric light and power house. Bonds for \$81,000 will be arranged for the work including equipment.

The Concrete Specialty Co., 2009 Guinotte Street, Kansas City, Mo., manufacturer of blocks, tile, etc., is said to have preliminary plans for a one-story addition at rear of the present factory, estimated to cost \$25,000 with equipment. H. C. Sackze is head.

The McClinton Sales Corporation, 300 South Fifth Street, Fort Smith, Ark., is interested in locating a shop in position to contract for the manufacture of a quantity of patented air gages of automatic type.

The Common Council, Norborne, Mo., plans the installation of pumping machinery in connection with proposed extensions and improvements in the municipal waterworks. It is purposed to raise a fund of \$80,000 for the work.

The Union Electric Light & Power Co., Locust and Twelfth Streets, St. Louis, is arranging an extension and improvement program for 1926 to cost about \$13,000,000, including proposed additions in the present steam-operated Kahoka and Ashley power plants. The latter work, with machinery, is estimated to cost \$3,200,000. The company will also make extensive additions in transmission system. The parent organization, the North American Co., Cleveland, is also planning for extensions and betterments in its other utilities in Wisconsin and California, and is arranging funds of \$11,000,000 and \$16,000,000, respectively, for power plant and transmission line work in these districts.

Pittsburgh

PITTSBURGH, March 8.

THERE is a very fair inquiry for single tools in this market, but the tendency, recently noted, on the part of buyers to take plenty of time about placing orders continues. The McClintic-Marshall Co., which is rehabilitating its Chicago district plants was a recent buyer of several punches and shears and still has some other tools to purchase. The Carnegie Steel Co., Pittsburgh, has bought a 13-in. geared head lathe.

The American Sheet & Tin Plate Co., Pittsburgh, will build a new routine testing laboratory at its Wood works, McKeesport, Pa., to cost \$60,000. Upon its completion it will house the equipment of the laboratory now in use at Demmler, near McKeesport.

A fire, March 2, which did damage at the plant of Hubbard & Co., Pittsburgh, to the amount of about \$800,000, destroyed the shovel works. It will be replaced and construction will start soon.

The Pennsylvania-Ohio Edison Co., Sharon, Pa., with headquarters at Youngstown, Ohio, has arranged for an in-

crease in capital from \$52,500,000 to \$70,191,400, a portion of the proceeds to be used for extensions and improvements in plants and system.

The Hammermill Paper Co., East Lake Road, Erie, Pa., has awarded a contract to J. C. Hammond, Ariel Building, for a three-story addition, 60 x 67 ft., to be equipped as a finishing department, estimated to cost \$65,000. The company is also having plans drawn for a four-story extension, 40 x 90 ft., to cost close to \$75,000, for which bids will be asked soon. Kidd & Kidd, 522 Franklin Street, Buffalo, are architects. Ernest R. Behrend is president.

The Goodman Mfg. Co., Farmers' Bank Building, Pittsburgh, manufacturer of mining machinery, electric locomotives, etc., has acquired a one-story building on site, 110 x 120 ft., Northside, for a factory branch. Headquarters of the company are at Forty-eighth Place and Halsted Street, Chicago.

The City Council, Tarentum, Pa., has plans under way for extensions and improvements in the municipal electric light and water plant, estimated to cost \$200,000 with machinery. Hudson & Myron, Wabash Building, Pittsburgh, are engineers.

The National Armature Co., Locust Street, Bluefield, W. Va., manufacturer of electric armatures and other electrical apparatus, has awarded a general contract to Rosenheim, Pemberton & Cruise, Bluefield, for a one-story plant, 58 x 140 ft., to cost about \$25,000.

The Board of Education, Swan Building, Johnstown, Pa., plans the installation of manual training equipment in the three-story and basement school to be erected on Morrellville Street, estimated to cost \$750,000, for which superstructure will soon be placed under way.

The Duquesne Light Co., 435 Sixth Street, Pittsburgh, will erect an unloading tower on the right bank of the Allegheny River at Colfax, Pa.

Gulf States

BIRMINGHAM, March 8.

PLANs are being considered by the Imperial Sugar Co., Sugarland, Tex., for rebuilding the portion of its plant destroyed by fire Feb. 28, with loss estimated at \$180,000 including equipment.

W. P. Lincoln, Electra, Tex., is completing plans for the construction of a factory for the manufacture of steel tanks and other plate products, to cost \$27,000 with equipment.

The Galveston Electric Co., Galveston, Tex., has taken over the local plant and property of the Brush Electric Co., and will consolidate with its system. Plans are under advisement for extensions and improvements. The purchasing company is operated by Stone & Webster, Inc., 147 Milk Street, Boston.

The W. R. Pickering Lumber Co., Pickering, La., is considering rebuilding the portion of its mill destroyed by fire Feb. 26, with loss reported at \$200,000 including machinery.

The W. M. Smith Co., First Avenue, Birmingham, machinery dealer, has inquiries out for a baling press, hydraulic type, suitable for handling tin cans and kindred materials; also for a crawler-type steam shovel, with 1-yd. capacity bucket.

Moise H. Goldstein, Hibernian Building, New Orleans, architect, is taking bids for a five-story automobile service, repair and garage building on Gravier Street, to cost \$200,000 with equipment. The two upper stories will be equipped as a wagon works for body building, etc.

The Board of Education, Fort Worth, Tex., plans the installation of manual training equipment in the proposed new junior polytechnic high school estimated to cost \$315,000, for which superstructure will begin at once.

The Smith Machinery Exchange Co., 1700 West Church Street, Jacksonville, Fla., has inquiries out for machine tools and other machine shop equipment, including hand tools.

The West Texas Utility Co., Abilene, Tex., has tentative plans for a new steam-operated electric power house at Junction, Tex., to cost \$45,000 with equipment.

Fire, Feb. 26, destroyed a portion of the sawmill and lumber plant of the Louisiana Sawmill Co., Glenmora, La., with loss reported at \$175,000 including equipment. It is planned to rebuild.

The Lucas Oil & Refining Co., Dallas, Tex., recently organized with a capital of \$500,000, has taken over a refinery at Grand Prairie, Tex., and will make extensions and install new machinery. It also plans the early acquisition of other refineries and oil properties. B. C. Lucas is head.

The Kingsville Produce & Milling Co., Kingsville, Tex., will erect a new ice-manufacturing plant at Kerrville, Tex. A cold storage and refrigerating plant will also be built. The entire project will cost about \$60,000 with equipment.

The Curtis Enameling Co., 931 Howard Avenue, New Orleans, is said to have preliminary plans for new works at Daytona Beach, Fla., estimated to cost \$150,000 with equipment. F. B. Curtis is president.

The Riverside Ice Co., Fort Worth, Tex., will build a new one-story ice-manufacturing plant at Sylvania and Chenault Streets, to cost \$45,000 with equipment.

The Compress Buckle Co., 215 Houston Street, Fort Worth, Tex., manufacturer of wire products and devices, is considering the erection of an addition to its plant at Attalla, Ala., to cost about \$23,000 with equipment. J. A. Todd is president.

The Lone Star Gas Co., American Exchange National Bank Building, Dallas, Tex., operating natural gas properties, has arranged for an increase in capital from \$10,675,000 to \$13,500,000, the proceeds to be used for extensions and improvements in plants and additional pipe lines. D. L. Cobb is treasurer.

Heckman-Lindahl, Inc., Sarasota, Fla., is planning to purchase sand handling machinery, for unloading from barges, conveying to bins and yards, etc.

Pacific Coast

SAN FRANCISCO, March 8.

THE California Wire & Cable Co., 1001 Eighty-first Avenue, Oakland, Cal., has awarded a general contract to the Austin Co., San Francisco, for a one-story addition, to cost \$25,000.

The Southern Sierras Power Co., Riverside, Cal., has authorized the immediate construction of an addition to its steam-operated electric power plant at San Bernardino, Cal., reported to cost \$90,000 with equipment.

A one-story manual training shop, 70 x 150 ft., will be erected at the proposed Horace Mann junior high school, Los Angeles, for which bids are being asked by the Board of Education until March 17. The entire structure will cost \$340,000. A. M. Edelman and A. C. Zimmerman, H. W. Hellman Building, are architects.

E. F. & H. P. Sophey, Santa Rosa, Cal., have leased a one-story building, 120 x 200 ft., to be erected by Kinslow Brothers at Third and A Streets, and will install equipment for automobile and truck body building, with department for repair work.

The John A. Roebling & Sons Co., 646 Folsom Street, San Francisco, with headquarters at Trenton, N. J., has abandoned plans recently drawn for a factory branch and distributing plant at Sixteenth, Seventeenth, De Haro and Carolina Streets, San Francisco, and will have new plans prepared immediately for a two-story structure to occupy entire site, estimated to cost \$200,000 with equipment. The engineering department of the company is in charge.

The American Safety Ladder Co., 135 South Fifth Street West, Salt Lake City, Utah, has plans for a one-story addition, 40 x 120 ft.

The Stout Lumber Co., Marshfield, Ore., has plans for a one-story machine shop, 75 x 200 ft., for which foundations will be laid soon.

The Washington Cement Co., Seattle, care of Philips Morrison, Leary Building, Seattle, one of the company heads, has tentative plans for a new mill on the Seattle tideflats, with an annual production of 750,000 bbl. A limestone quarry with complete operating machinery will be established at Denny Mountain. The entire project is estimated to cost \$1,500,000.

The Oregon Pulp & Paper Co., Salem, Ore., is completing plans for a two-story machine room addition to its mill, 135 x 200 ft., estimated to cost \$150,000 with equipment. The company is also considering an expansion and improvement program, reported to cost \$750,000. Knight & Howell, United States National Bank Building, Portland, are architects.

The Mount Shasta Power Corporation, San Francisco, will proceed with a proposed hydroelectric power development on the Pit River, Shasta County, to be known as Pit No. 4 project, to provide an initial capacity of 100,000 kva. It is estimated to cost more than \$1,250,000. A transmission line will be built to connect with the system of the Pacific Gas & Electric Co.

The Yosemite Portland Cement Co., Fresno, Cal., is completing plans for the early construction of a proposed mill near Merced, Cal., where a large tract was secured several months ago. The plant will be equipped for an initial daily output of 2000 bbl., and is estimated to cost \$1,250,000 with machinery. A. Emory Wishon, vice-president and general manager of the San Joaquin Light & Power Corporation, is president.

A. H. Cox & Co., 307 First Avenue South, Seattle, manufacturers of mining machinery and parts, have awarded a general contract to the Austin Co., for a one-story addition, 50 x 105 ft., to cost \$30,000.

The Warman Electric Foundry Co., 3334 East Slauson Avenue, Los Angeles, has been incorporated with capital stock of \$100,000 to manufacture gray iron and semi-steel castings. Work is under way on the erection of a plant and the company expects to be in operation by April 1.

The Coast Heater Mfg. Co., Monrovia, Cal., has been incorporated to manufacture water heaters for bungalows, small apartment buildings, hotels, etc. The company is headed by A. C. Kronquest, who also owns the Maywood Water Heater Co., Maywood, Ill.

The Terminal Sheet Metal Works, Inc., 738 Commerce Street, Tacoma, Wash., has been incorporated to manufacture skylights, cornices, radiators, fenders and other sheet metal work and is in the market for materials and equipment.

The Symphonaer Co., 504 Wilshire Boulevard, is contemplating the erection of an organ factory on Pico Boulevard, Santa Monica, at a cost of \$1,000,000. Preliminary sketches have been made by Charles F. Winder, president of the company.

A five-story and basement garage will be erected on Canon Drive, Beverly Hills, by Dr. M. A. Wilson, Bradbury Building, Los Angeles, at a cost of \$100,000. It will be designed to carry two additional stories. The Industrial Construction Co., 555 Chamber of Commerce Building, has been awarded the contract.

Levake & Gridner, 1010 Santa Fe Building, San Francisco, desire quotations on seamless steel tubing in large quantities. Sizes $\frac{7}{8}$ in. outside diameter x 16 gage; price per foot f.o.b. San Francisco. Must be annealed, bendable and not split.

Indiana

INDIANAPOLIS, March 8.

CONTRACT has been let by the Railway Service & Supply Corporation, 23 North Pennsylvania Street, Indianapolis, to the Steco Steel Building Co., Michigan City, Ind., for a new plant at Fort Wayne, Ind., to cost about \$50,000 with equipment.

The George J. Mayer Co., Indianapolis, manufacturer of metal signs, etc., has removed to a new plant at Liberty and Market Streets where additional facilities will be provided for considerable increase in output.

Thomas L. Green & Co., 202 Miley Avenue, Indianapolis, manufacturers of bakers' machinery and equipment, have revised plans for a two-story addition, 25 x 122 ft., for which bids will soon be asked on general contract. C. E. Bacon, Odd Fellows Building, is architect.

The Board of Education, Evansville, Ind., plans the installation of manual training equipment in the proposed two-story addition to the Reitz high school in the Forest Hills district, estimated to cost \$175,000, for which bids will soon be asked on a general contract; also, in the proposed two-story Bosse junior high school on Washington Avenue, to cost about \$150,000, for which it is expected to call bids at the same time. Plans for both structures are being drawn by J. C. Llewellyn, 38 South Dearborn Street, Chicago, architect.

The McLaughlin Mill Supply Co., Hammond, Ind., is having plans drawn for a three-story and basement addition on Michigan Avenue, 70 x 92 ft.

A power plant will be constructed at the new hospital and nurses' school to be established by the Ball Brothers Hospital Association of the Ball Brothers Co., Muncie, Ind., glass manufacturer. The entire project will cost \$1,000,000. Kibele & Garrard, 118 East Adams Street, are architects.

D. Schwartz, 225 East Main Street, Fort Wayne, Ind., automobile equipment and accessories, has plans for a one-story shop and headquarters, 60 x 72 ft., at 1706 Harrison Street. A. M. Strauss, Tri-State Building, is architect.

* A power plant will be built at the knitting mill to be erected by the General Hosiery Co., Fort Wayne, Ind., on East Pontiac Street, Industrial Park addition. The entire project will cost \$400,000. Henry I. Herbst is general manager.

The Warner Gear Co., Muncie, Ind., will begin erection immediately of several factory additions for which equipment will be needed. R. P. Johnson is president and general manager.

The L. G. S. Mfg. Co., Twenty-sixth Street and Cornell Avenue, Indianapolis, manufacturer of automobile starter drive units, is contemplating the purchase of high-speed production machinery to cost approximately \$25,000. W. Carleton Starkey is vice-president and general manager.

Canada

TORONTO, March 8.

SINCE the first of the year the Canadian machine tool market has shown steady improvement. February sales were much better than those of January and according to business in prospect the opinion is expressed that still greater activity will shortly feature the market. In addition to the steady demand for one or two tools, lists are making their appearance in which larger numbers are involved. The placing of locomotive and other rolling stock equipment by the Canadian railroads has stimulated demand from builders of this class of equipment. The automotive industry is also showing more interest in the market.

The Live Wire Co., manufacturer of insulated wire, etc., has purchased the property of the former Guelph Carriage Top Co., Guelph, Ont., and will remodel the building and install considerable machinery to enter into the manufacture of other products. J. Godfrey Smith is manager of the company.

Alexander Rae has purchased the building at Guelph, Ont., formerly occupied by the White Sewing Machine Co. of Canada, and will install machinery to expand his business of carriage building, automobile body manufacture and general blacksmithing.

Owing to the increasing demand for power in this locality the town of Sherbrooke, Que., will add another generating unit to its Weedon power plant, bringing the capacity up to 50,000 hp.

The Steel Co. of Canada, Ltd., Hamilton, Ont., has completed plans for a \$300,000 addition to its works. While details have not been made public it is believed that the addition will include a new galvanizing plant.

Fraser Gaspe, Ltd., Drapeau, Que., has started work on the erection of a sawmill at St. Jean L'Evangeliste, Que., and is interested in equipment.

The Miller Brothers Paper Co., Glen Miller, Ont., proposes to build a dam and power house at Trenton, Ont.

The Nelson River Construction Co., Ltd., Bank of Hamilton Building, Toronto, has the general contract for construction for the hydro power development at Coaticook, Que., for the Town Council. The English Electric Co. of Canada, Ltd., 211 McGill Street, Montreal, has been awarded contract for the electrical machinery.

The building occupied by the Atlas Metal Co. and Hudon-Herbert & Co., Ltd., on De Bresoles, Montreal, was destroyed by fire with loss of \$140,000. It will be rebuilt immediately.

L. Fournier, 67 Inspector Street, Montreal, is asking for prices on a new steel round shelf boiler 6 x 16 feet, 140 lb. pressure. Engines are also required.

Schultz Brothers & Co., Albion Street, have the general contract for a plant addition at Brantford, Ont., for the Crown Electric Mfg. Co.

Western Canada

The Frechette 2 in 1 Snap Hook Co., Nelson, B. C., has completed its building and is now working on dies and other tools for the manufacture of hooks. It manufactures heavy crane and logging hooks. As soon as the present plant is in operation the company proposes to build a malleable iron foundry.

The Dominion National Consolidated Industries, Ltd., care of City Hall, New Westminster, B. C., is having plans prepared by its own engineers for the erection of a pulp mill and sawmill on Poplar Island, B. C., to cost approximately \$2,000,000.

The town of Hartney, Man., is having plans prepared for the installation of an electric power plant.

Foreign

THE Department of Public Works, Madrid, Spain, has authorized the purchase of four electric cranes, one of 45 tons capacity and the others each of 3 tons capacity, for installation at the port works at Gijon and Musel. The Harbor Commission, which will arrange for the purchase, has been directed to make a careful study of cranes as especially adapted to handling coal and railroad harbor traffic in general, prior to contracting for the equipment.

Albert A. Thorne, 130 Regent Street, Bourda, Georgetown, Demerara, British Guiana, desires to get in touch with manufacturers of a machine for making bags from manilla rope, such as those used for storing sugar, etc.

The Great Colonial Sugar Refining Co., Adelaide, Australia, will soon consider plans for rebuilding its local mill recently destroyed by fire, with loss reported at \$3,000,000 including machinery.

The American Chamber of Commerce in France, 32 Rue Taitbout, Paris, has received an inquiry (J-3233) from a company at Paris interested in getting in touch with American manufacturers of check valves.

The J. G. White Engineering Corporation, 43 Exchange Place, New York, has contracted with the Mexican Government for the construction of a series of irrigation projects to cost about \$20,000,000. The initial tracts to be improved are located in the Province of Chihuahua, Durango, Neuva Leon, Agua Calientes, Michoacan and Lower California. The work will include the construction of dams and reservoirs, pipe lines, power and pumping equipment, etc., and will be carried out over a term of years. The White company has formed a Mexican subsidiary to handle the project, to be known as the J. G. White Engineering Corporation, E. en C. Albert S. Crane is vice-president.

The John Darling & Sons Co., Albion, Australia, plan to rebuild the portion of its flour mills destroyed by fire late in February, with loss estimated at \$700,000 including machinery.

The State Electricity Commission of Victoria, Melbourne, Australia, is asking bids until May 24, for synchronous condensers and accessory power plant equipment. Specifications available at the offices of the Bureau of Foreign and Domestic Commerce, Customhouse, New York, and 76 West Monroe Street, Chicago.

The Electrical Department, city of Sydney, Australia, is asking bids until April 19 for 3-phase distribution type transformers. Specifications on file at the office of the Electrical Equipment Division, Bureau of Foreign and Domestic Commerce, Washington, reference number, Australia 193501.

Earnings of Smelting & Refining Co.

THE annual report of the American Smelting & Refining Co. for the year ended Dec. 31 shows a net income of \$15,190,760 after interest, depreciation, depletion and taxes, equivalent, after preferred dividends, to \$19.17 on each share of common stock. This compares with \$11,186,990 or \$12.60 a share in 1924. Surplus was \$7,725,890 as against \$4,484,595 in the previous year. The consolidated income account follows:

	1925	1924
Net earnings	\$26,762,845	\$21,471,506
Other income	1,215,780	1,469,423
Gross income	\$27,978,625	\$22,940,929
Net income after interest and depreciation	15,190,760	11,186,990
Preferred dividends	3,500,000	3,500,000
Common dividends	3,964,870	2,202,395
Year's surplus	\$7,725,890	\$4,484,595
Total surplus	24,511,423	22,252,381
Appropriations and adjustments	16,800,000	5,466,849
Profit and loss surplus	\$19,511,423	\$16,785,532

†Includes \$2,750,000 reserve for extraordinary obsolescence, contingencies and other reserves.

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Hartford, Conn., P. O. Box 81.....	D. C. Warren
New Jersey, Hotel Regent, Newark, N. J.....	W. C. Sweetser
New York, 239 West Thirty-Ninth St., W. C. Sweetser, C. L. Rice, E. Slinnack	
San Francisco, 320 Market St.....	W. A. Douglas

Current Metal Prices

On Small Lots, Delivered from Stocks, New York

THESE prices are given for the convenience of small-lot buyers whose requirements do not run into mill-size orders.

Only base prices can be listed in some cases, due to limits of space; other items of a given group are deducible from the base price.

The prices which are quoted below are those at which small lots may be bought, whether from jobbers' or other stocks.

Complete market reports and prices on large shipments from mills will be found elsewhere under "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates		Per Lb.
Bars:		
Refined iron bars, base price	.....	3.24c.
Swedish charcoal iron bars, base	.....	7.00c. to 7.25c.
Soft steel bars, base price	.....	3.14c. to 3.24c.
Hoops, base price	.....	4.49c.
Bands, base price	.....	3.99c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base	.....	3.24c. to 3.34c.
Channels, angles and tees under 3 in. x ¼ in. base	.....	3.14c. to 3.24c.
Steel plates, ¼ in. and heavier	.....	3.24c. to 3.34c.

Merchant Steel		Per Lb.
Tire, 1½ x ½ in. and larger (Smooth finish, 1 to 2½ x ¼ in. and larger)	.....	3.30c.
Toe-calk, ½ x ¾ in. and larger	.....	4.20c.
Cold-rolled strip, soft and quarter hard	.....	6.25c.
Open-hearth spring steel	.....	4.50c. to 7.00c.
Shafting and Screw Stock:		
Rounds and hex.	.....	4.00c. to 5.00c.
Squares and flats	.....	4.50c. to 5.50c.
Standard tool steel, base price	.....	12.00c.
Extra tool steel	.....	15.00c. to 18.00c.
Special tool steel	.....	20.00c. to 23.00c.
High-speed steel, 18 per cent tungsten	.....	70c.

Sheets		Per Lb.
Blue Annealed		
No. 10	.....	3.89c.
No. 12	.....	3.94c.
No. 14	.....	3.99c.
No. 16	.....	4.09c.

Box Annealed—Black		Per Lb.
Soft Steel		
C. R. One Pass	.....	Per Lb.
Nos. 18 to 20	.....	4.30c.
Nos. 22 and 24	.....	4.35c.
No. 26	.....	4.40c.
No. 28*	.....	4.50c.
No. 30	.....	4.70c.

Galvanized		Per Lb.
No. 14	.....	4.60c. to 4.75c.
No. 16	.....	4.75c. to 4.90c.
Nos. 18 and 20	.....	4.90c. to 5.05c.
Nos. 22 and 24	.....	5.05c. to 5.20c.
No. 26	.....	5.20c. to 5.35c.
No. 28*	.....	5.50c. to 5.65c.
No. 30	.....	6.00c. to 6.15c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

Welded Pipe		Per Lb.
Standard Steel		
Black Galv.		
½ in. Butt....	46 29	4.75c.
¾ in. Butt....	51 37	4.90c.
1-3 in. Butt....	53 39	5.05c.
2½-6 in. Lap..	48 35	5.20c.
7 & 8 in. Lap..	44 17	5.35c.
11 & 12 in. Lap	37 12	5.50c.
Wrought Iron		
Black Galv.		
½ in. Butt....	4 19	5.65c.
¾ in. Butt....	11 9	5.80c.
1-1½ in. Butt	14 6	5.95c.
2-in. Lap.....	5 14	6.10c.
3-6 in. Lap....	11 6	6.25c.
7-12 in. Lap...	3 16	6.40c.

Bolts and Screws		Per Lb.
Machine bolts, cut thread, 40 and 10 per cent off list	
Carriage bolts, cut thread, 30 and 10 per cent off list	
Coach screws, 40 and 10 per cent off list	
Wood screws, flat head iron,	
77½, 20, 10, 10 and 10 per cent off list	

Steel Wire		Per Lb.
BASE PRICE† ON NO. 9 GAGE AND COARSER		
Bright, basic	.....	4.25c.
Annealed, soft	.....	4.50c.
Galvanized, annealed	.....	5.15c.
Coppered, basic	.....	5.15c.
Tinned, soft Bessemer	.....	6.15c.

†Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire		Per Lb.
BASE PRICE		
High brass sheet	.....	19½c. to 20½c.
High brass wire	.....	19½c. to 20½c.
Brass rods	.....	16½c. to 17½c.
Brass tube, brazed	.....	27½c. to 28½c.
Brass tube, seamless	.....	23½c. to 24½c.
Copper tube, seamless	.....	24½c. to 25½c.

Copper Sheets		Per Lb.
Sheet copper, hot rolled, 22½c. to 23½c. per lb. base.	
Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.	

Tin Plates		Per Lb.
Coke—14x20		
Bright Tin	Grade	Grade
	"AAA"	"A"
	Charcoal	Charcoal
	14x20	14x20
IC..	\$11.25	\$8.85
IX..	12.85	10.85
IXX..	14.40	12.55
IXXX..	15.75	13.85
IXXXX..	17.00	15.05

Terne Plates		Per Lb.
14 x 20		
IC—8-lb. coating	.....	\$7.75 to \$8.00
IC—20-lb. coating	.....	10.00 to 11.00
IC—30-lb. coating	.....	12.00 to 13.00
IC—40-lb. coating	.....	13.75 to 14.25
Fire-door stock	.....	10.50

Tin		Per Lb.
Straits, pig	.....	65½c. to 66¼c.
Bar	.....	68¾c. to 69¼c.

Copper		Per Lb.
Lake ingot	.....	15½c.
Electrolytic	.....	15¼c.
Casting	.....	15 c.

Spelter and Sheet Zinc		Per Lb.
Western spelter	.....	8½c. to 9c.
Sheet zinc, No. 9 base, casks	.....	13¼c.; open, 13½c.

Lead and Solder*		Per Lb.
American pig lead	.....	9½c. to 10½c.
Bar lead	.....	11¼c. to 12¼c.
Solder, ½ and ½ guaranteed	.....	40¾c.
No. 1 solder	.....	39¾c.
Refined solder	.....	33½c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal		Per Lb.
Best grade, per lb.	.....	68c. to 72c.
Commercial grade, per lb.	.....	30c. to 35c.

Antimony		Per Lb.
Asiatic	.....	22½c. to 24½c.

Aluminum		Per Lb.
No. 1 aluminum (guaranteed over 99 per cent pure), ingots for remelting, per lb.	.....	30c. to 30½c.

The market is fairly firm. Dealers' buying prices are as follows:

		Cents Per Lb.
Copper, heavy crucible	.....	12.00
Copper, heavy wire	.....	11.75
Copper, light bottoms	.....	9.50
Brass, heavy	.....	7.00
Brass, light	.....	6.25
Heavy machine composition	.....	8.75
No. 1 yellow brass turnings	.....	8.50
No. 1 red brass or composition turnings	.....	8.00
Lead, heavy	.....	7.25
Lead, tea	.....	5.75
Zinc	.....	4.25
Cast aluminum	.....	18.00
Sheet aluminum	.....	18.00